FIG.1

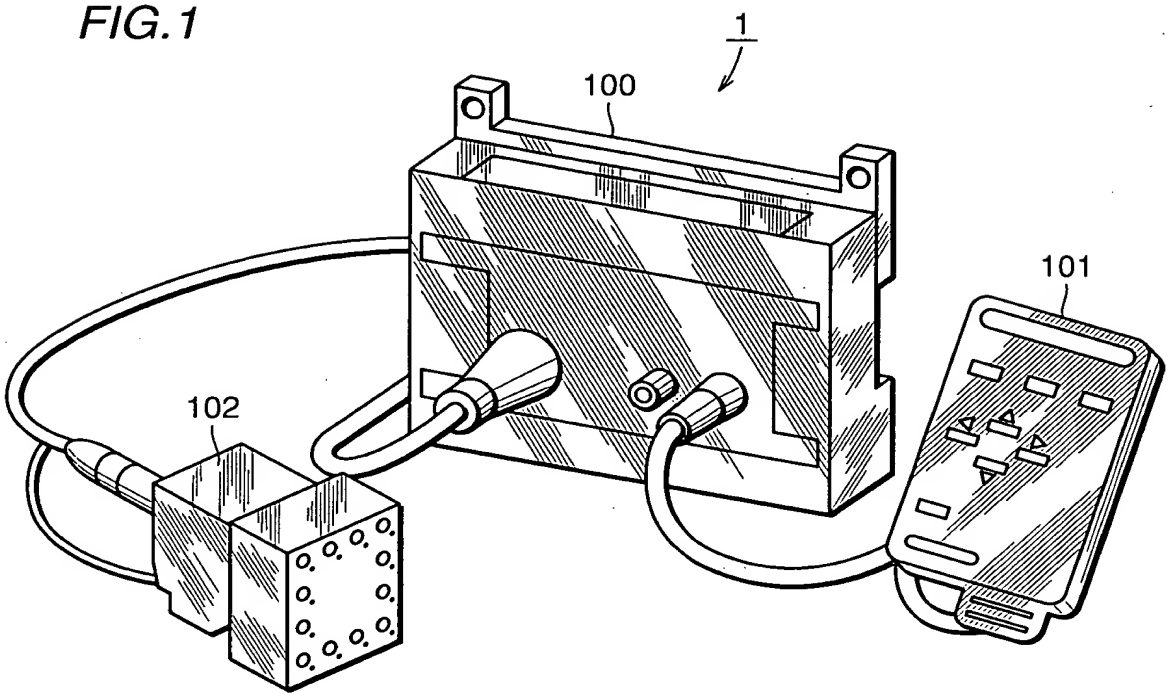

1
100
101
102

FIG.2

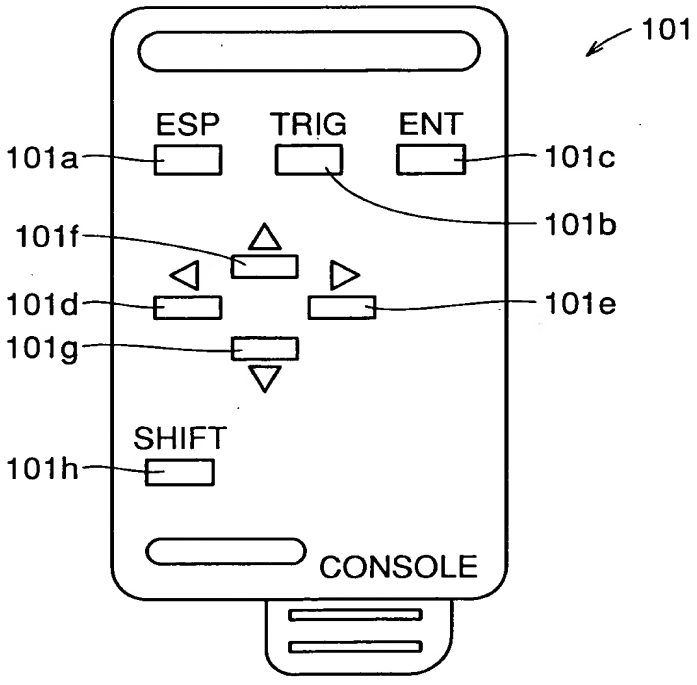

101
ESP
TRIG
ENT
101a
101c
101b
101f
101d
101e
101g
SHIFT
101h
CONSOLE

FIG.3

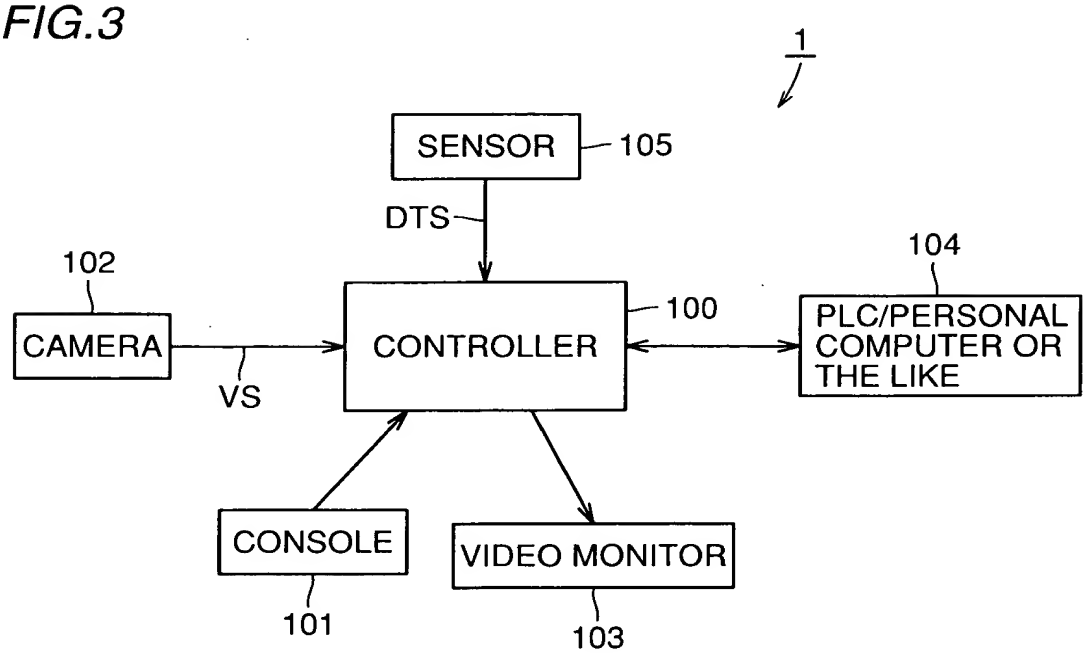

1
SENSOR
105
DTS
102
104
CAMERA
CONTROLLER
100
PLC/PERSONAL COMPUTER OR THE LIKE
VS
CONSOLE
VIDEO MONITOR
101
103

FIG.4

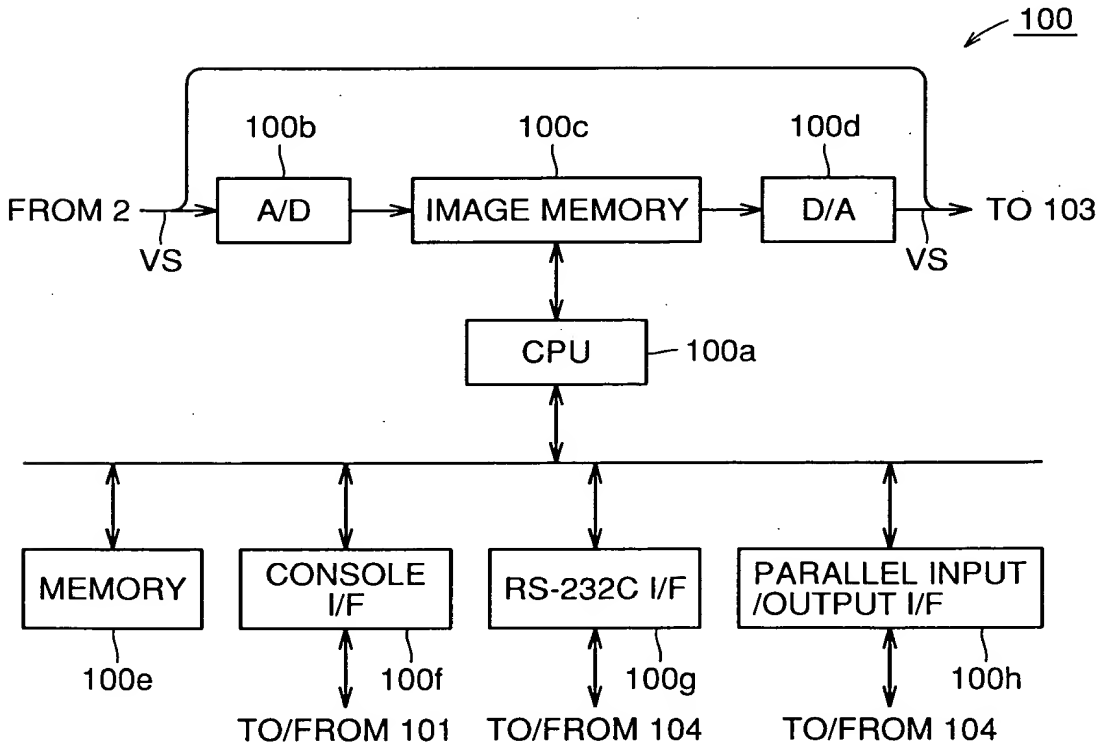

100
100b
100c
100d
FROM 2
A/D
IMAGE MEMORY
D/A
TO 103
VS
VS
CPU
100a
MEMORY
CONSOLE I/F
RS-232C I/F
PARALLEL INPUT /OUTPUT I/F
100e
100f
100g
100h
TO/FROM 101
TO/FROM 104
TO/FROM 104

FIG.5

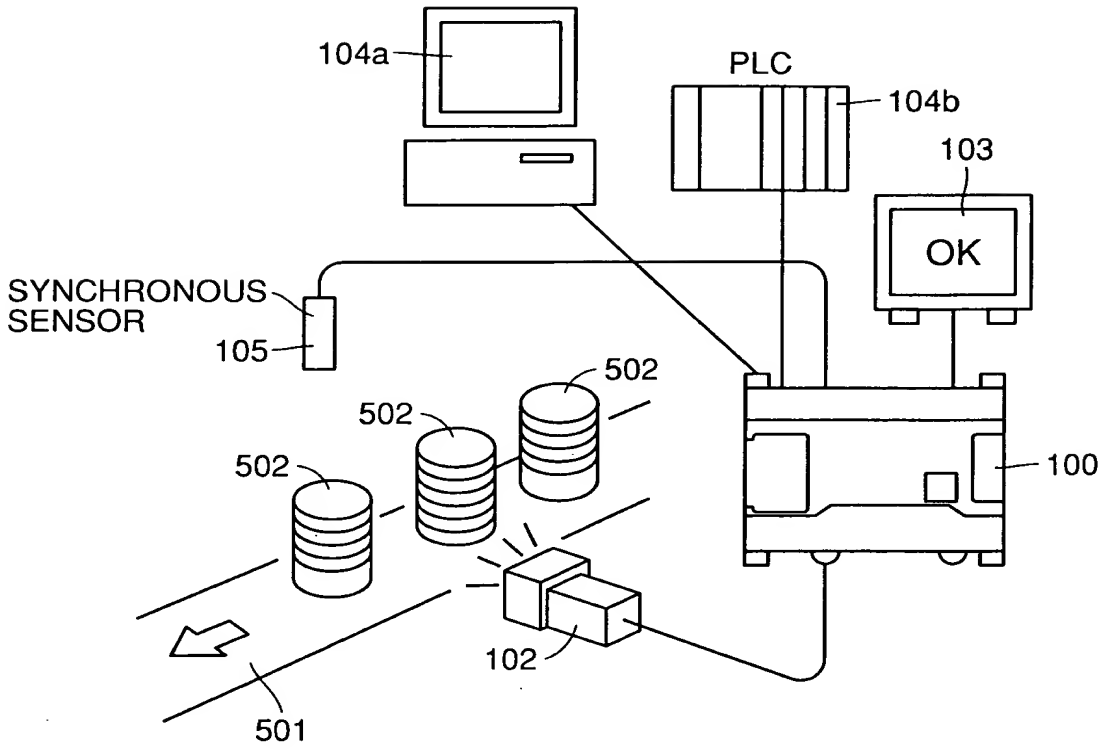

104a
PLC
104b
103
OK
SYNCHRONOUS SENSOR
105
502
502
502
100
102
501

FIG.6

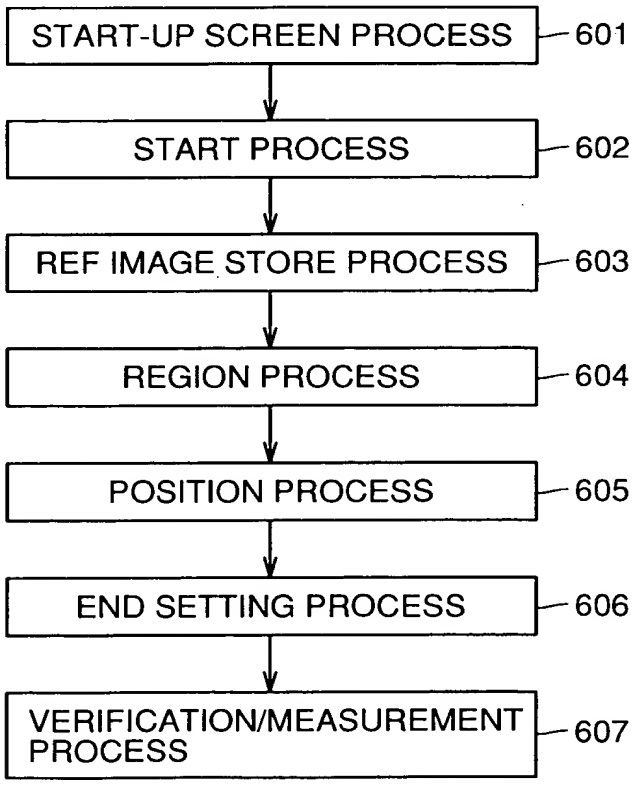

START-UP SCREEN PROCESS
601
START PROCESS
602
REF IMAGE STORE PROCESS
603
REGION PROCESS
604
POSITION PROCESS
605
END SETTING PROCESS
606
VERIFICATION/MEASUREMENT PROCESS
607

FIG.7

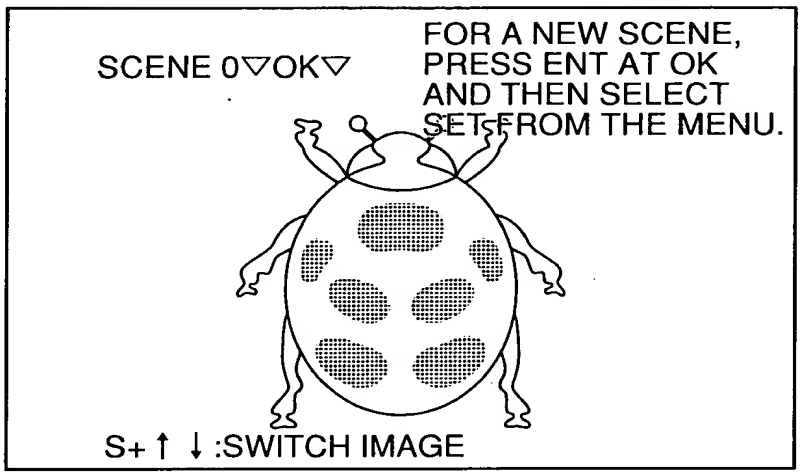

SCENE 0▽OK▽
FOR A NEW SCENE,
PRESS ENT AT OK
AND THEN SELECT
SET FROM THE MENU.
S+↑ ↓:SWITCH IMAGE

FIG.8

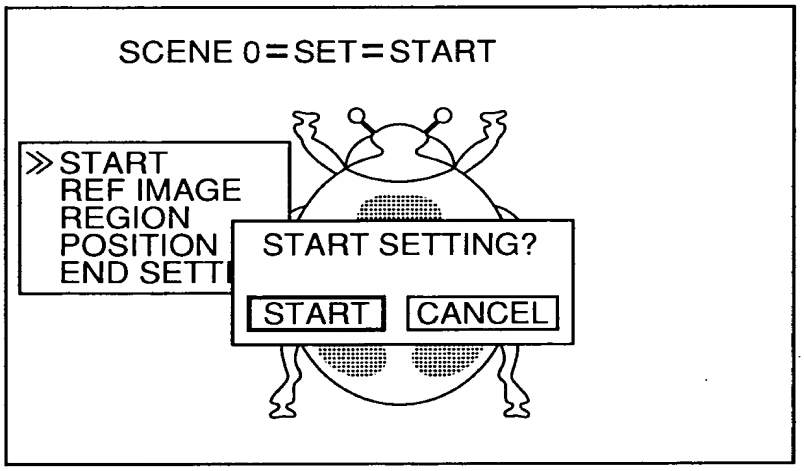

SCENE 0=SET=START
≫START
REF IMAGE
REGION
POSITION
END SETT
START SETTING?
START
CANCEL

FIG.9

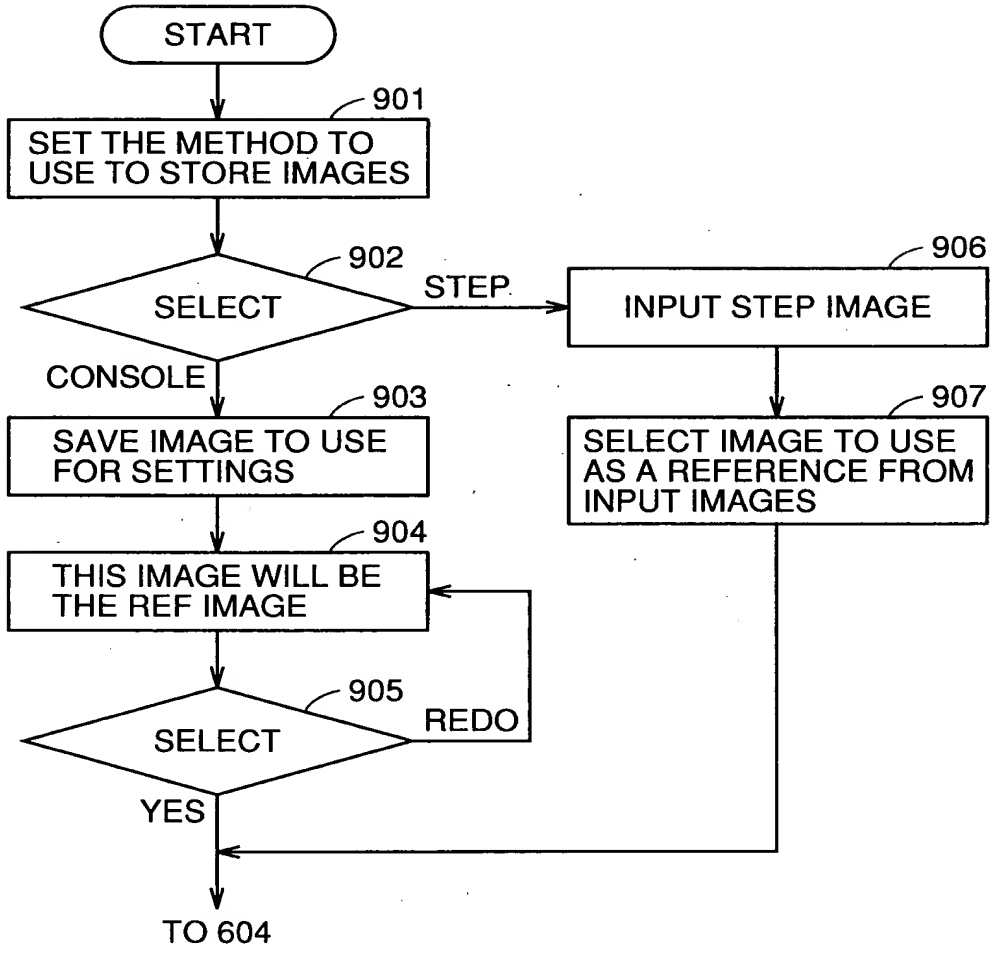

START
901
SET THE METHOD TO USE TO STORE IMAGES
902
SELECT
STEP
906
INPUT STEP IMAGE
CONSOLE
903
SAVE IMAGE TO USE FOR SETTINGS
907
SELECT IMAGE TO USE AS A REFERENCE FROM INPUT IMAGES
904
THIS IMAGE WILL BE THE REF IMAGE
905
SELECT
REDO
YES
TO 604

FIG.10

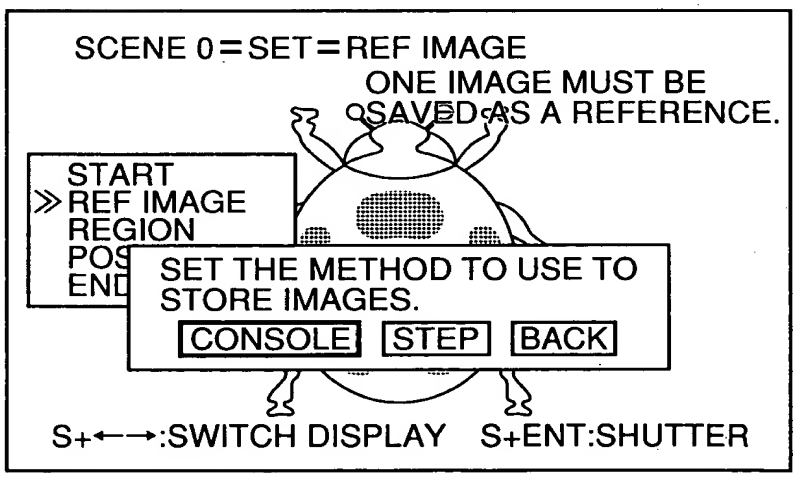

SCENE 0=SET=REF IMAGE
ONE IMAGE MUST BE SAVED AS A REFERENCE.
START
≫REF IMAGE
REGION
POS
END
SET THE METHOD TO USE TO STORE IMAGES.
CONSOLE
STEP
BACK
S+←→:SWITCH DISPLAY
S+ENT:SHUTTER

FIG.11

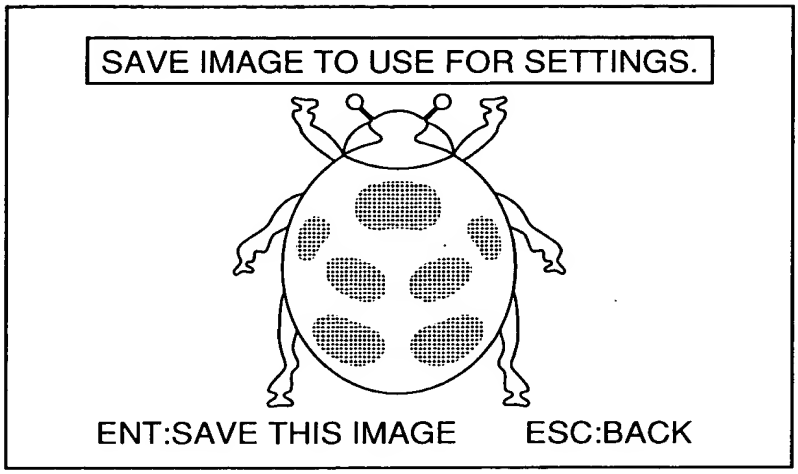


FIG.12

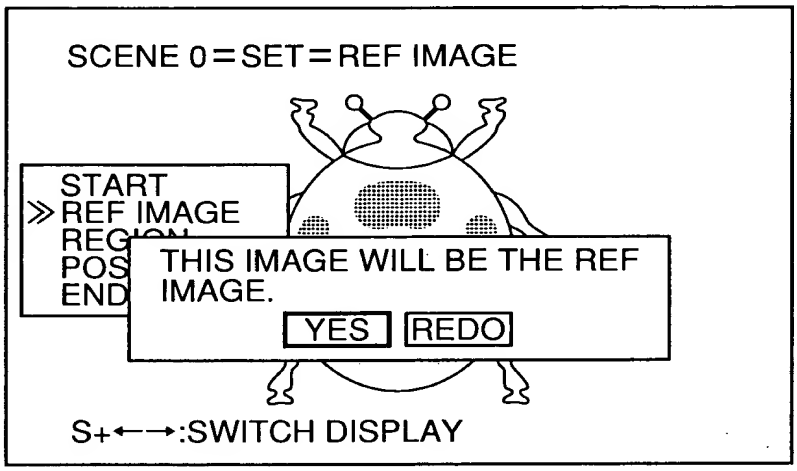


FIG.13

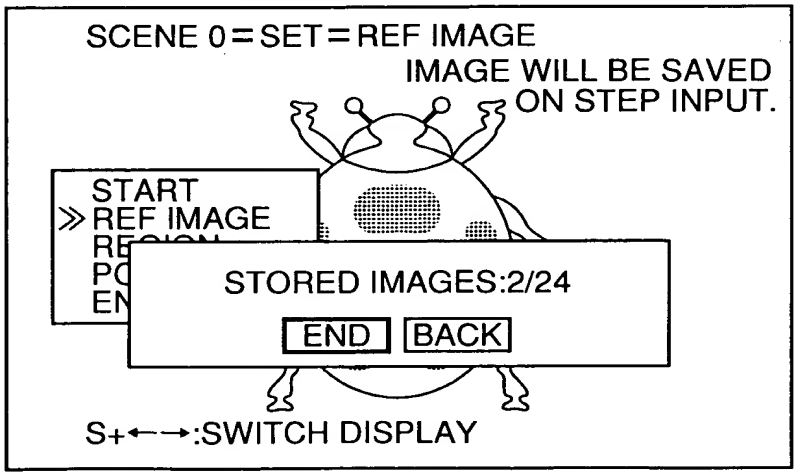


FIG.14

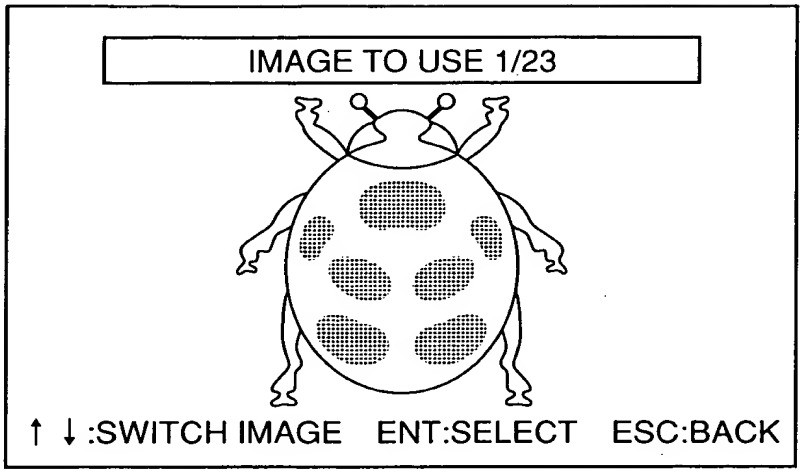


FIG.15

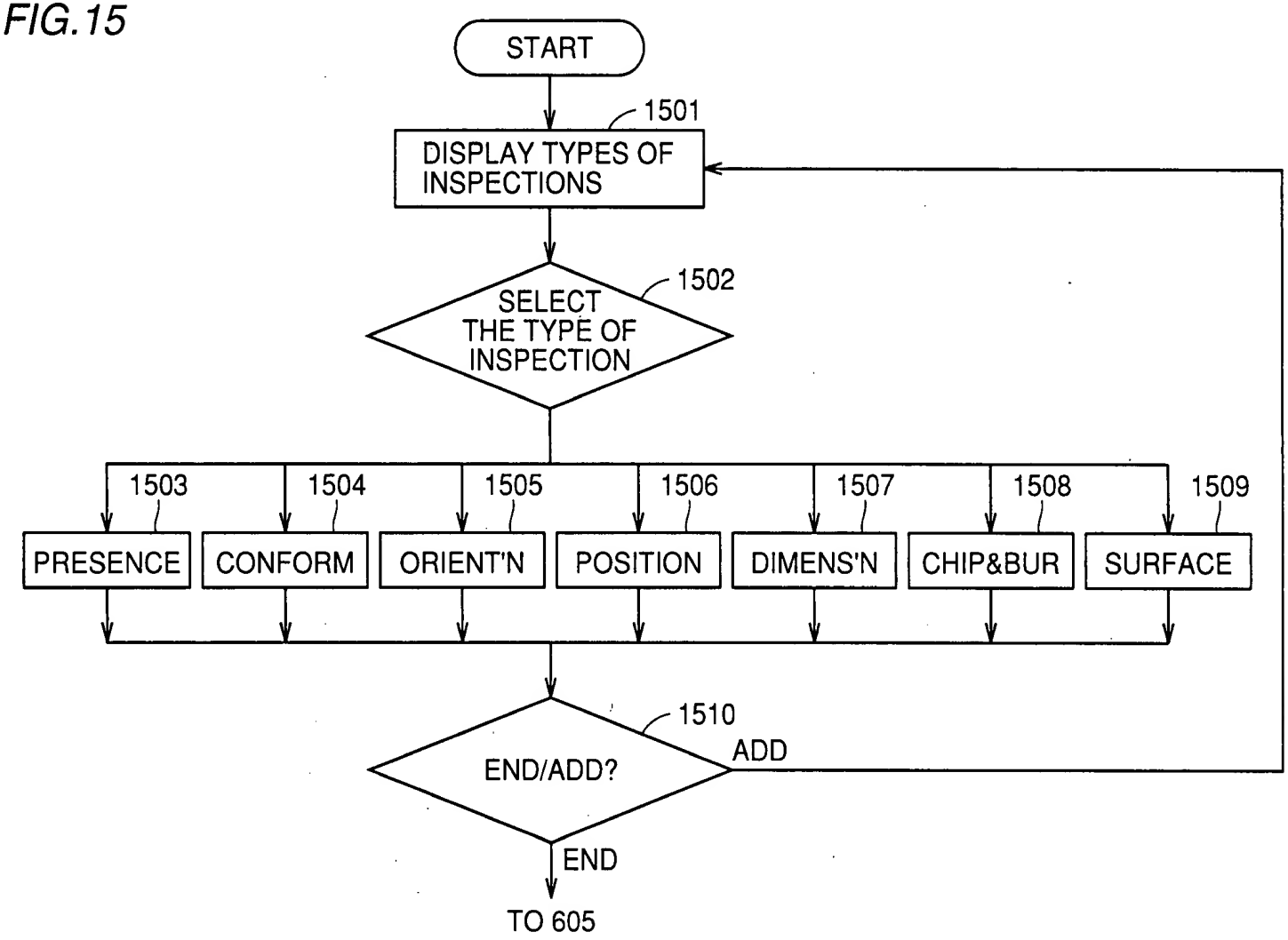


FIG. 16

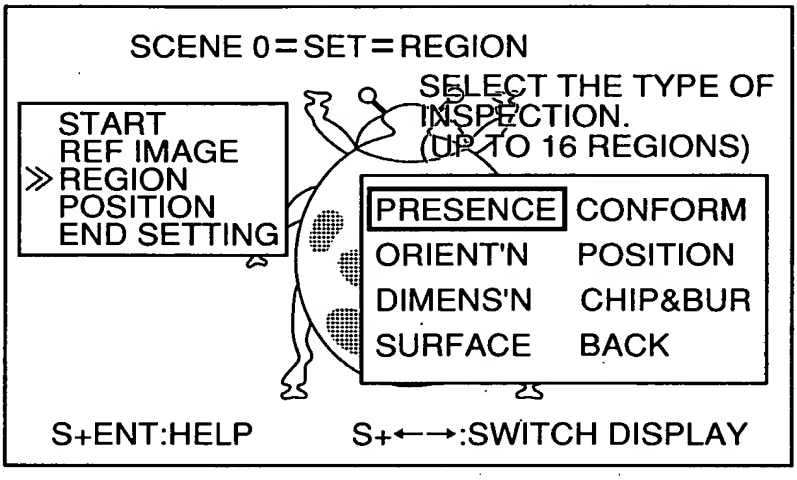


FIG. 17

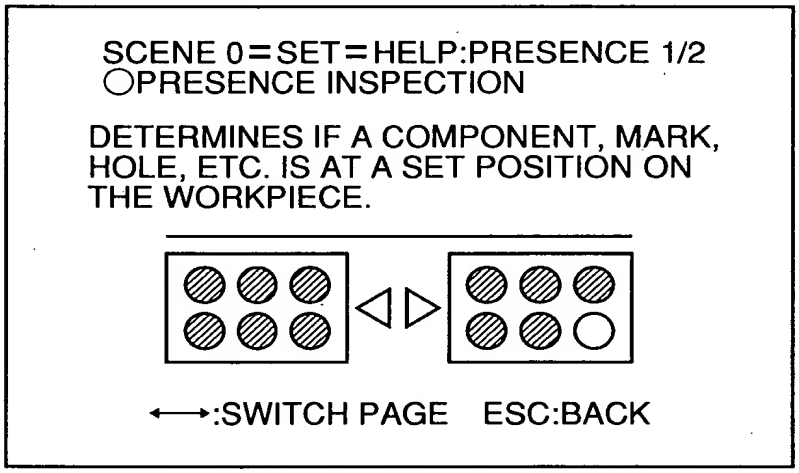


FIG. 18

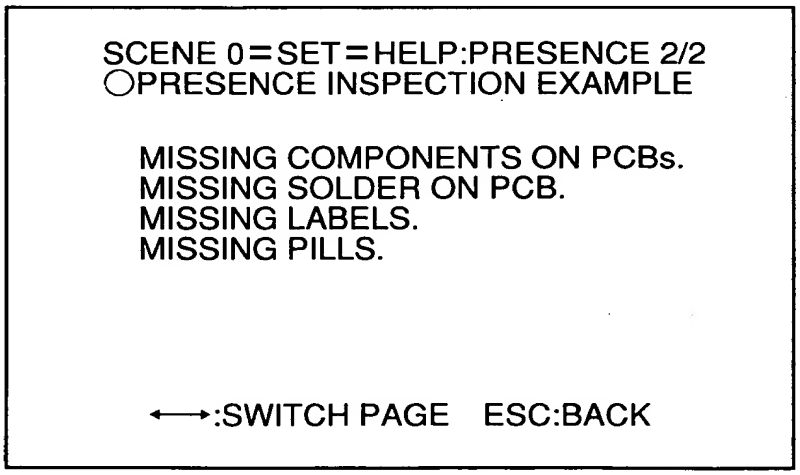
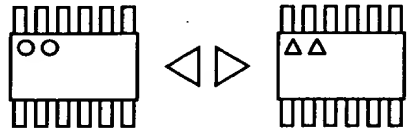


FIG.19

SCENE 0=SET=HELP:CONFORM 1/2
○CONFORMANCE INSPECTION

INSPECTS TO SEE IF WORKPIECE TYPE AGREES WITH REFERENCE.



←→:SWITCH PAGE ESC:BACK

FIG.20

SCENE 0=SET=HELP:CONFORM 2/2
○CONFORMANCE INSPECTION EXAMPLES

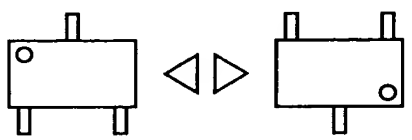
QUALITY CHECKS FOR GRADE MARKS.
IC TYPE CHECK BY No. OF LEADS.

←→:SWITCH PAGE ESC:BACK

FIG.21

SCENE 0=SET=HELP:ORIENT'N 1/2
○ORIENTATION INSPECTION

INSPECTS DIRECTION AND FRONT-BACK ORIENTATION OF WORKPIECE.



←→:SWITCH PAGE ESC:BACK

FIG.22

SCENE 0=SET=HELP:ORIENT'N 2/2
○ORIENTATION INSPECTION EXAMPLES

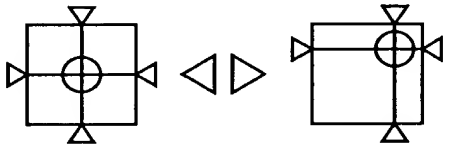
IC DIRECTION AND FRONT/BACK.
LABEL DIRECTION
COIL SPRING ORIENTATION

←→:SWITCH PAGE ESC:BACK

FIG.23

SCENE 0=SET=HELP:POSITION 1/2
○POSITION INSPECTION

FINDS POSITION OF SPECIFIED
MARK (E.G., HOLE) AND DETERMINES
IF IT IS WITHIN A SPECIFIED RANGE.



←→:SWITCH PAGE ESC:BACK

FIG.24

SCENE 0=SET=HELP:POSITION 2/2
○POSITION INSPECTION EXAMPLES

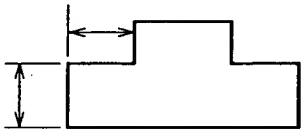
PCB POSITIONS
LCD REGISTRATION MARK POSITIONS
PRINTING POSITIONS
LABEL POSITIONS
SCREW HOLE POSITIONS

←→:SWITCH PAGE ESC:BACK

FIG.25

SCENE 0=SET=HELP:DIMENS'N 1/2
○DIMENSION INSPECTION

INSPECT THE RELATION/DIST BETWEEN TWO SPECIFIED POINTS TO SEE IF THEY ARE WITHIN A RANGE.



←→:SWITCH PAGE ESC:BACK

FIG.26

SCENE 0=SET=HELP:DIMENS'N 2/2
○DIMENSION INSPECTION EXAMPLES

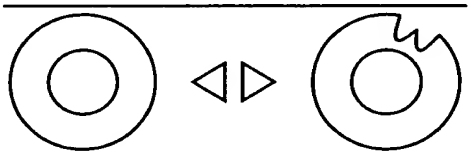
BOLT LENGTHS
MOLDED OBJECT DIMENSIONS

←→:SWITCH PAGE ESC:BACK

FIG.27

SCENE 0=SET=HELP:CHIP&BUR 1/2
○CHIP & BUR INSPECTION

INSPECTS FOR ABNORMAL CHIPS AND BURRS ON EDGES OF WORKPIECES.



←→:SWITCH PAGE ESC:BACK

FIG.28

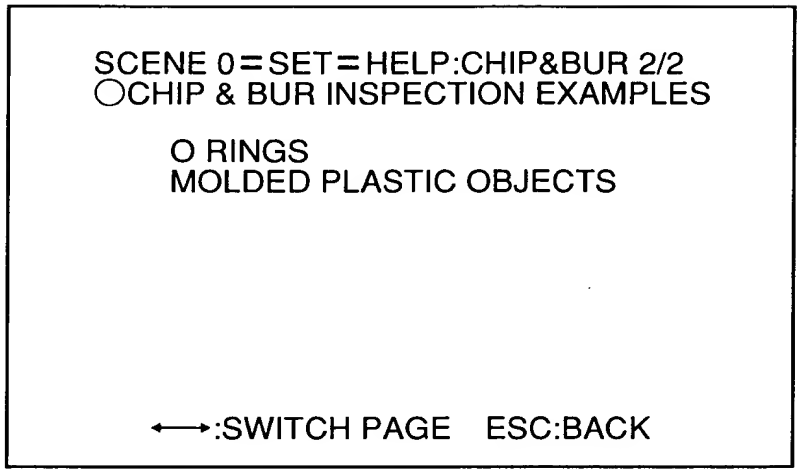


FIG.29

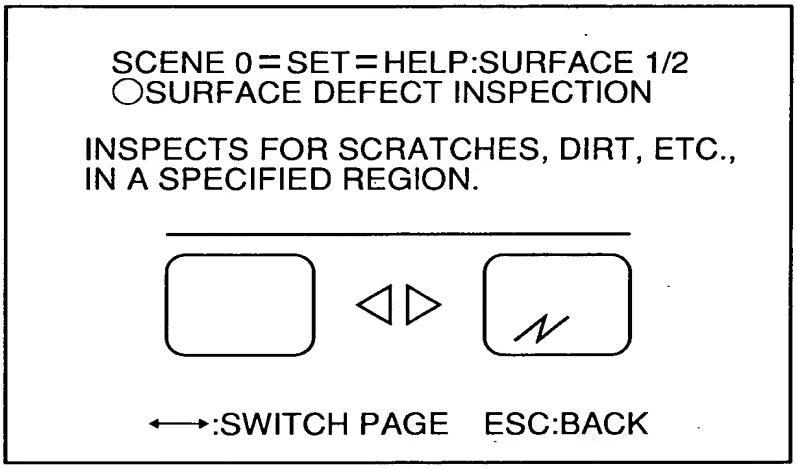


FIG.30

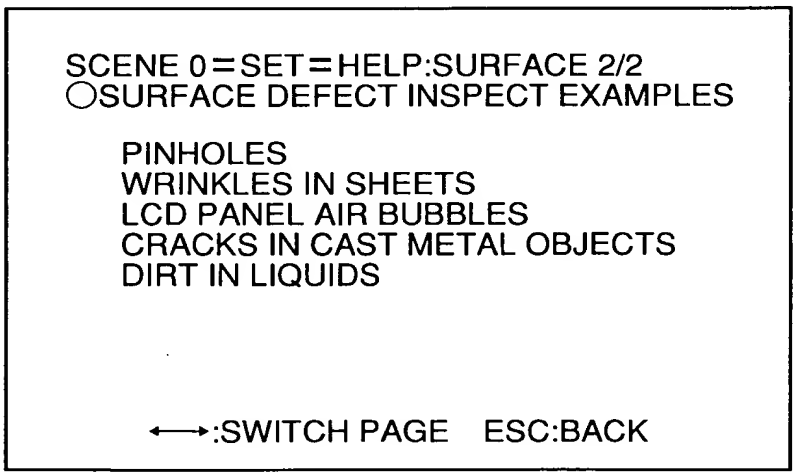


FIG.31

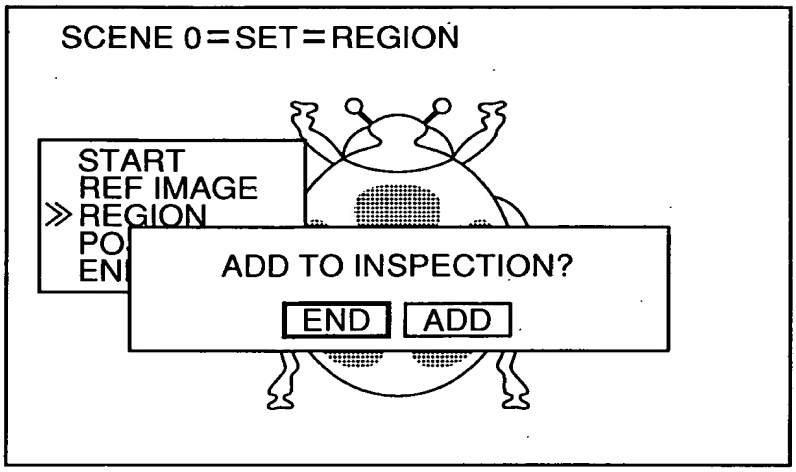

SCENE 0=SET=REGION
START
REF IMAGE
REGION
PO
EN
ADD TO INSPECTION?
END
ADD

FIG.32

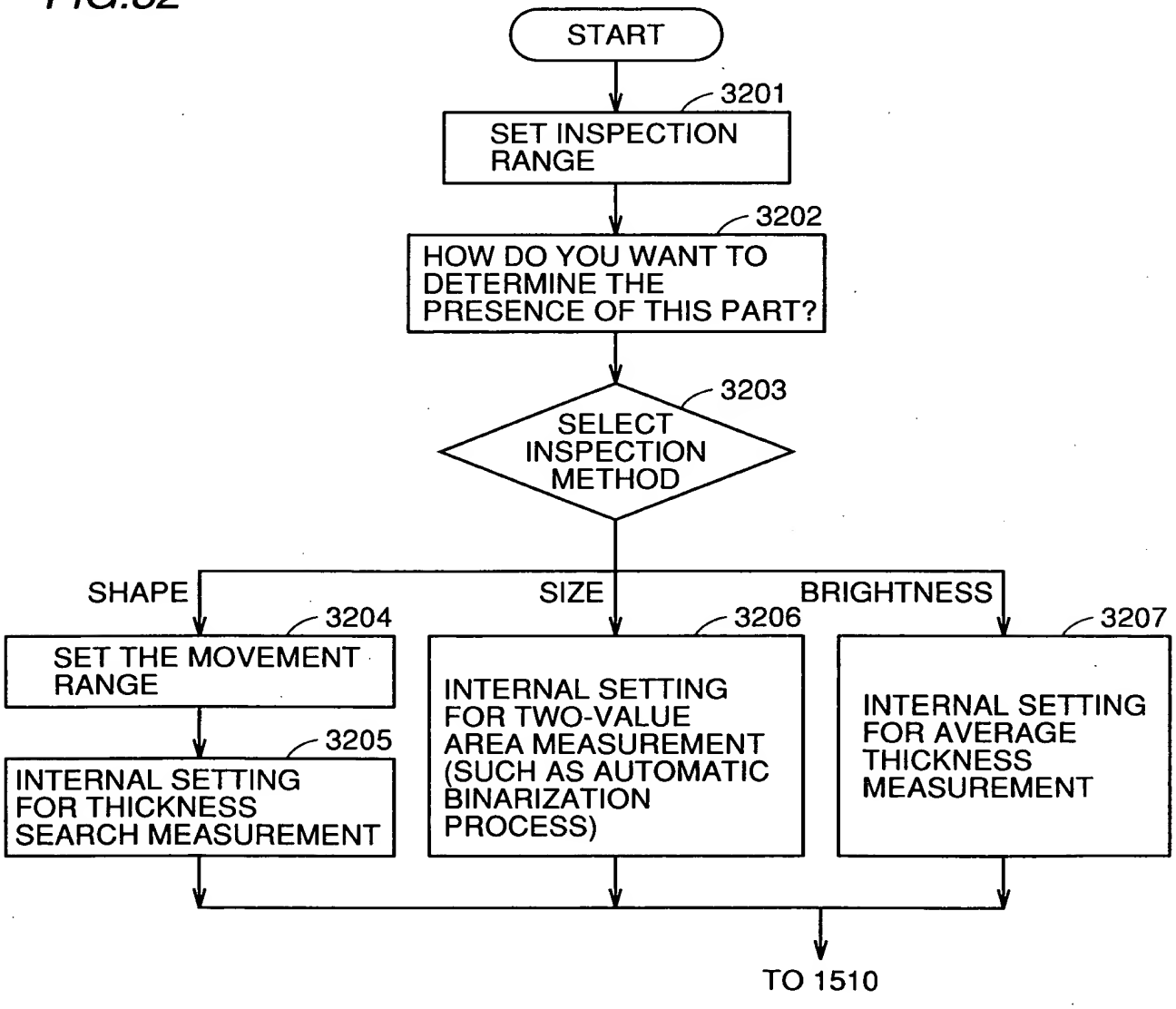

START
3201
SET INSPECTION RANGE
3202
HOW DO YOU WANT TO DETERMINE THE PRESENCE OF THIS PART?
3203
SELECT INSPECTION METHOD
SHAPE
SIZE
BRIGHTNESS
3204
SET THE MOVEMENT RANGE
3205
INTERNAL SETTING FOR THICKNESS SEARCH MEASUREMENT
3206
INTERNAL SETTING FOR TWO-VALUE AREA MEASUREMENT (SUCH AS AUTOMATIC BINARIZATION PROCESS)
3207
INTERNAL SETTING FOR AVERAGE THICKNESS MEASUREMENT
TO 1510

FIG.33

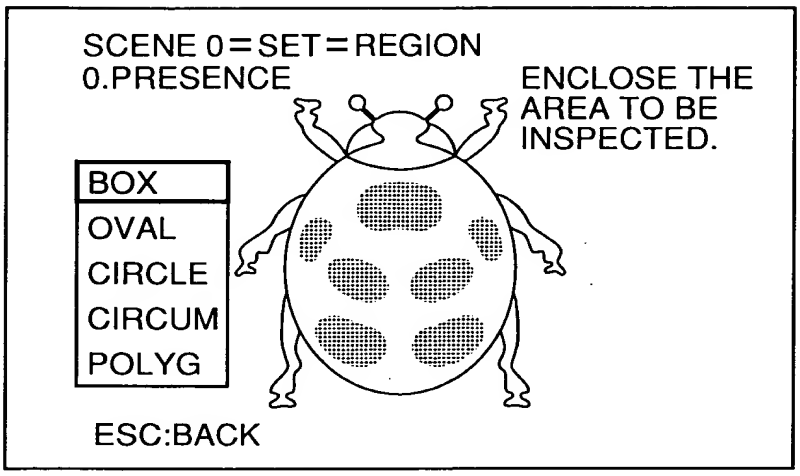


FIG.34

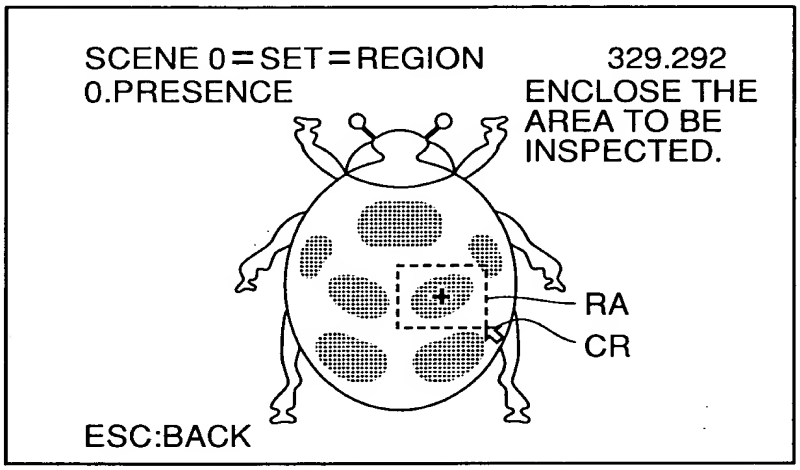


FIG.35

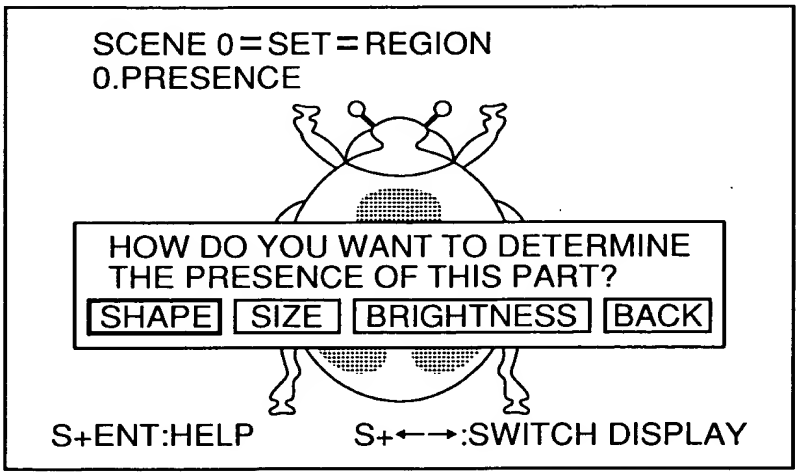


FIG.36

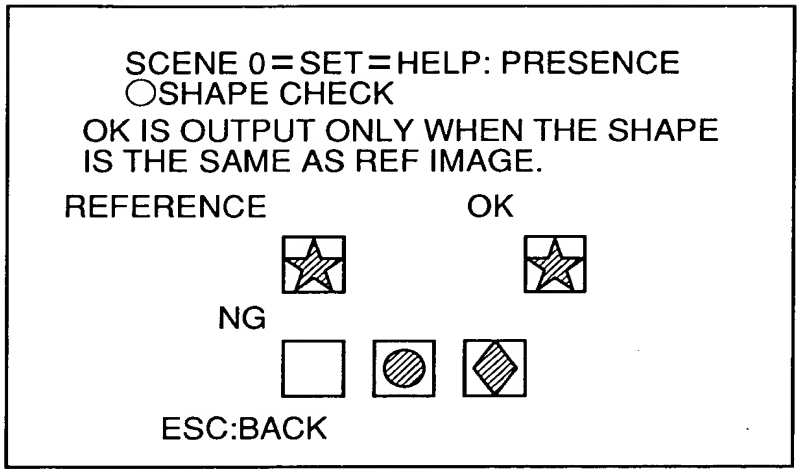


FIG.37

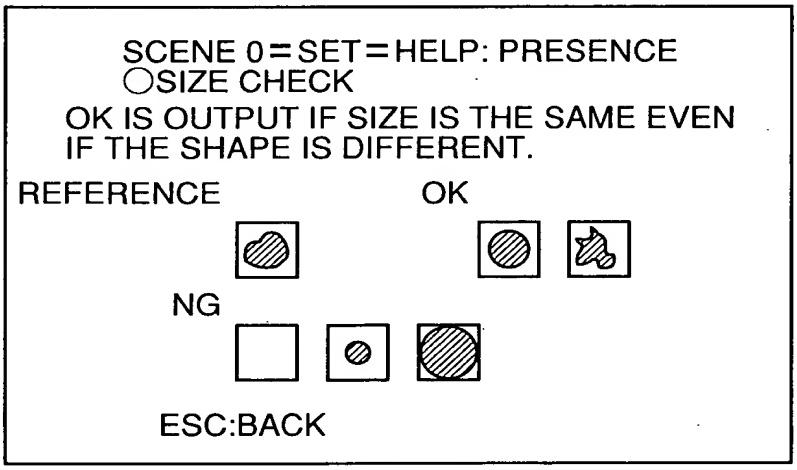


FIG.38

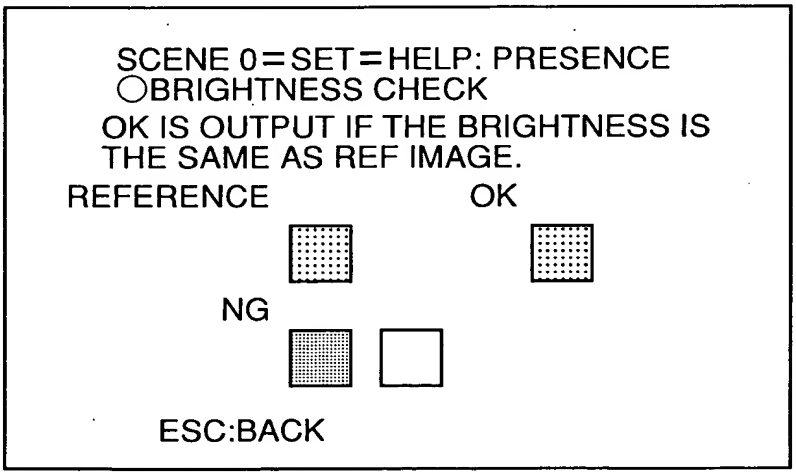


FIG.39

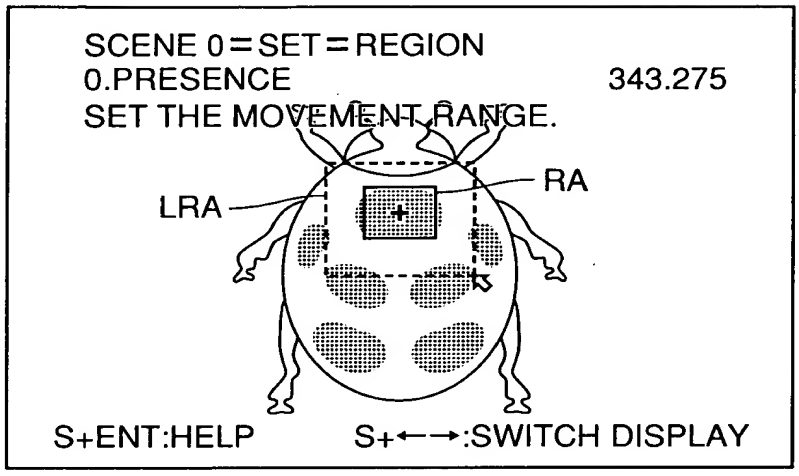

SCENE 0=SET=REGION
0.PRESENCE
343.275
SET THE MOVEMENT RANGE.
LRA
RA
S+ENT:HELP
S+←→:SWITCH DISPLAY

FIG.40

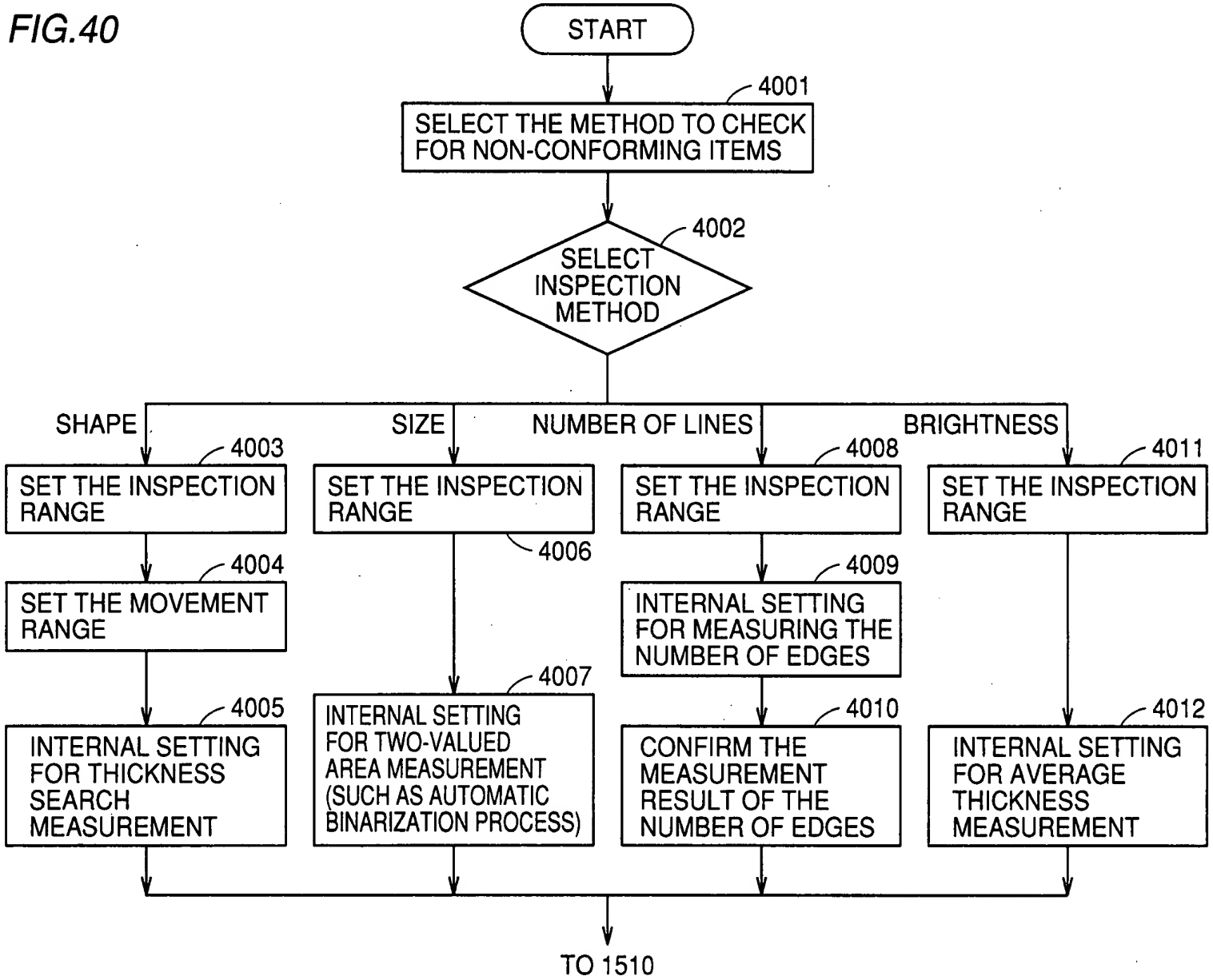

START
4001
SELECT THE METHOD TO CHECK FOR NON-CONFORMING ITEMS
4002
SELECT INSPECTION METHOD
SHAPE
SIZE
NUMBER OF LINES
BRIGHTNESS
4003
SET THE INSPECTION RANGE
4004
SET THE MOVEMENT RANGE
4005
INTERNAL SETTING FOR THICKNESS SEARCH MEASUREMENT
SET THE INSPECTION RANGE
4006
4007
INTERNAL SETTING FOR TWO-VALUED AREA MEASUREMENT (SUCH AS AUTOMATIC BINARIZATION PROCESS)
4008
SET THE INSPECTION RANGE
4009
INTERNAL SETTING FOR MEASURING THE NUMBER OF EDGES
4010
CONFIRM THE MEASUREMENT RESULT OF THE NUMBER OF EDGES
4011
SET THE INSPECTION RANGE
4012
INTERNAL SETTING FOR AVERAGE THICKNESS MEASUREMENT
TO 1510

FIG.41

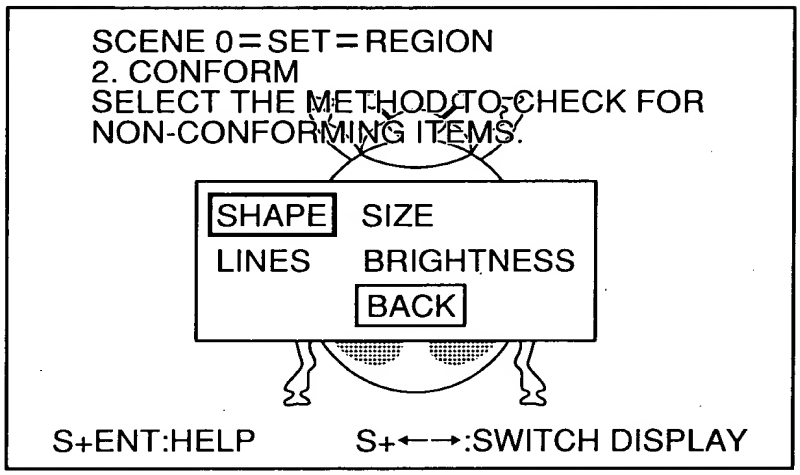


FIG.42

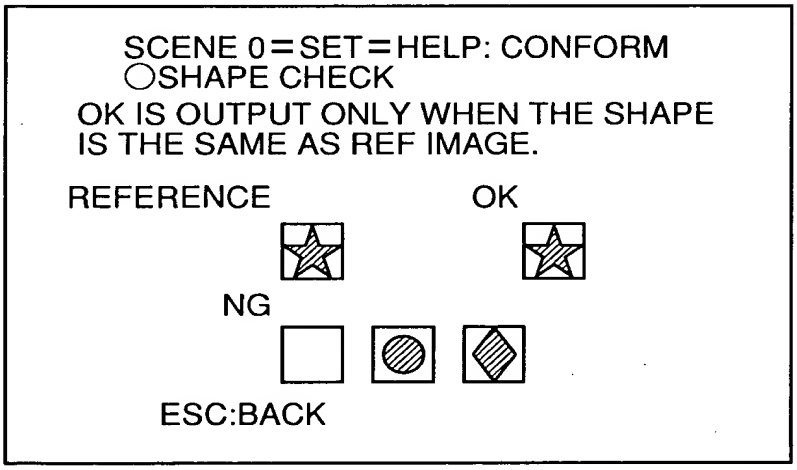


FIG.43

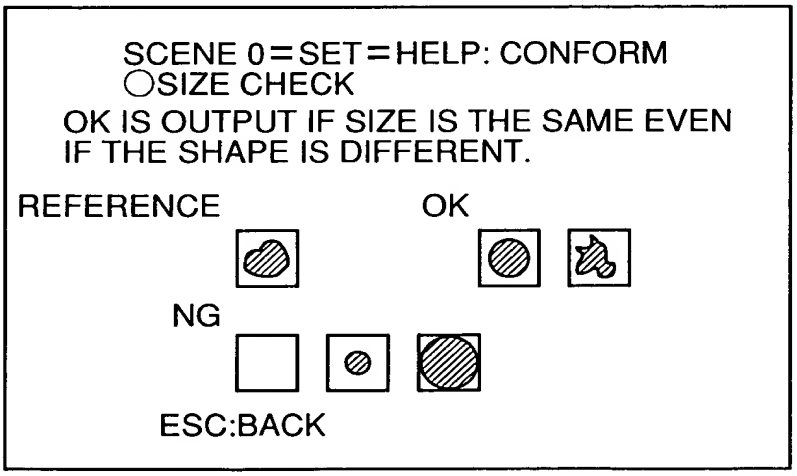


FIG.44

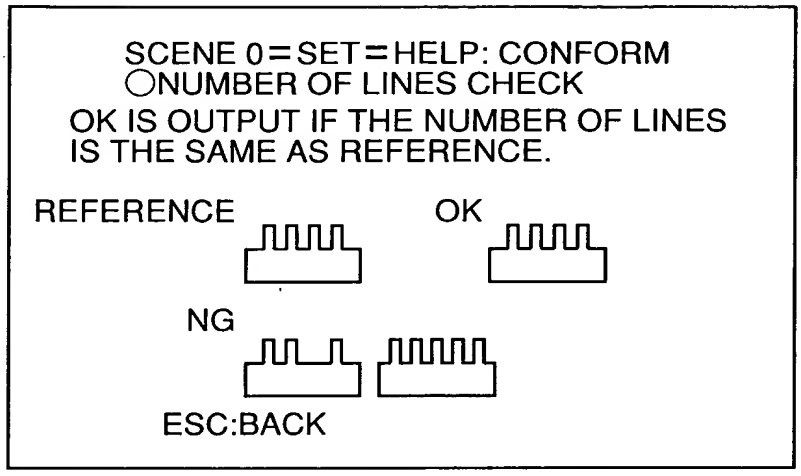


FIG.45

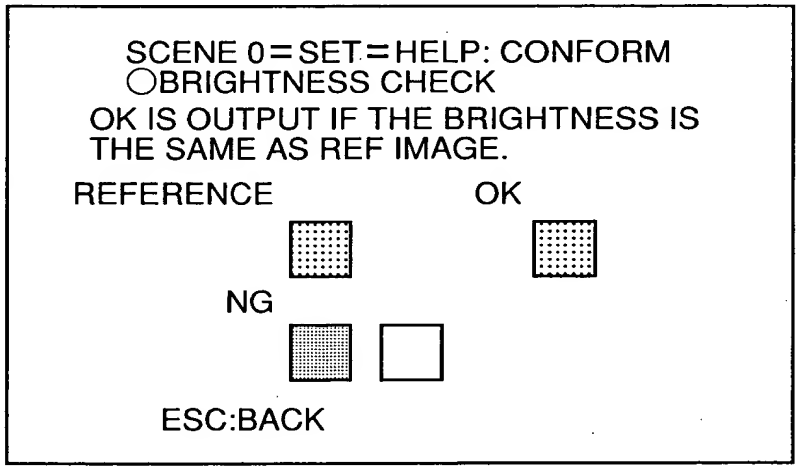


FIG.46

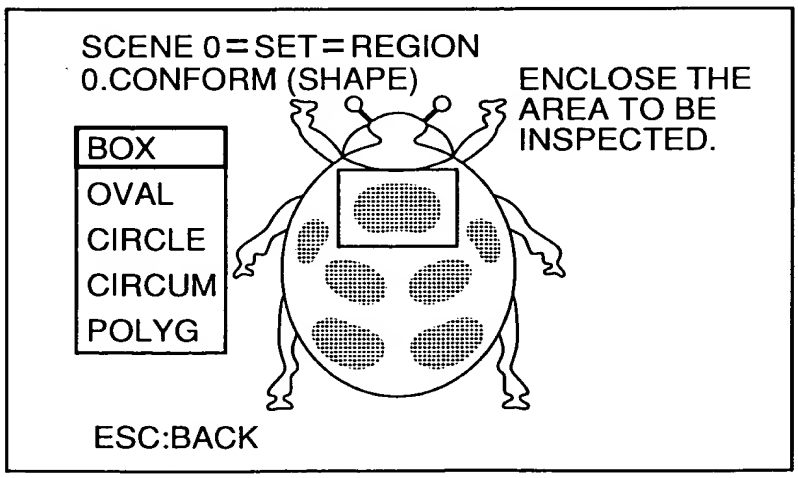


FIG.47

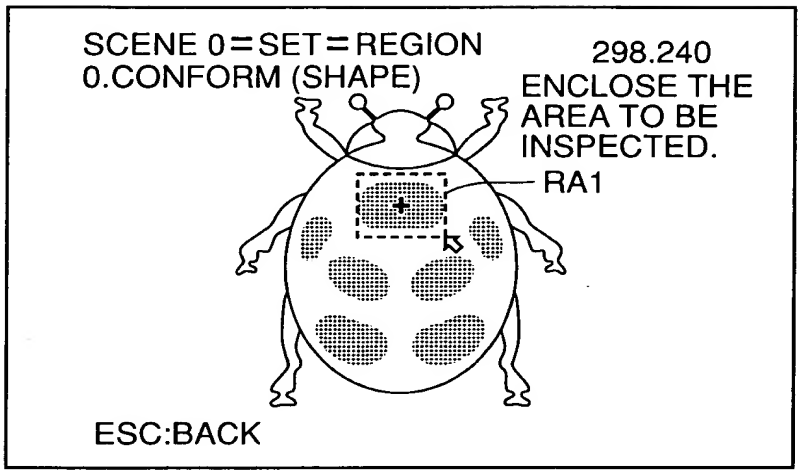


FIG.48

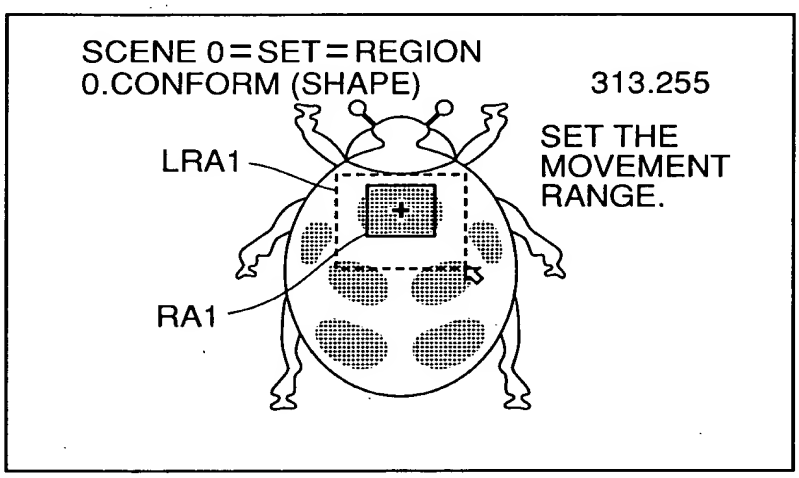


FIG.49

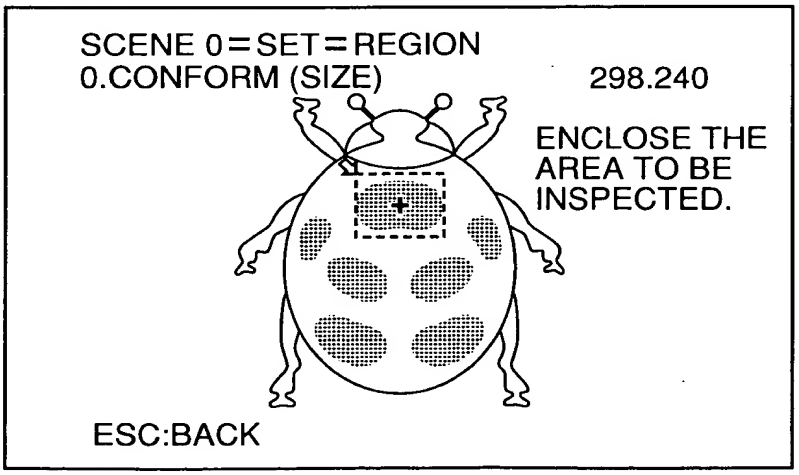


FIG.50

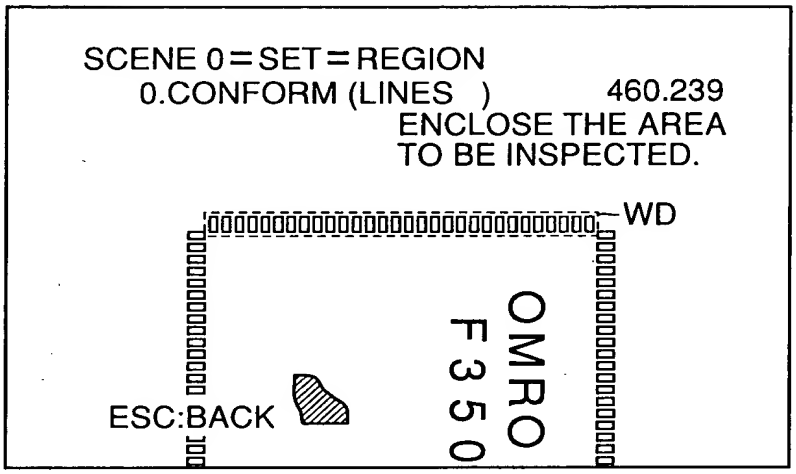

SCENE 0=SET=REGION
0.CONFORM (LINES)
460.239
ENCLOSE THE AREA
TO BE INSPECTED.
WD
OMRON
F350
ESC:BACK

FIG.51

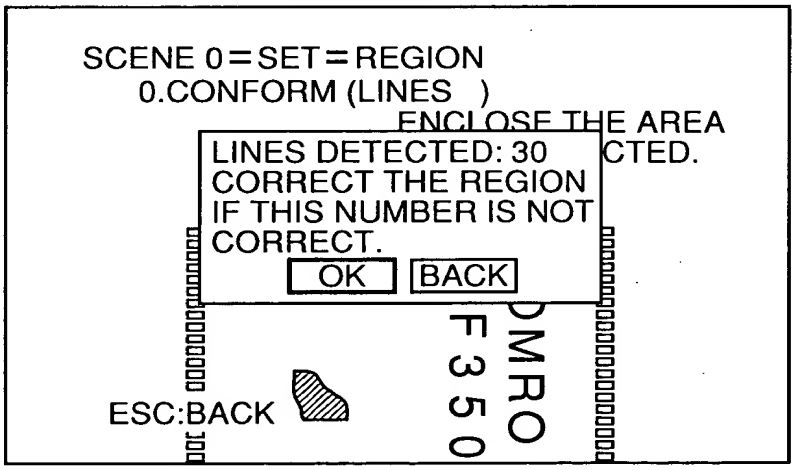

SCENE 0=SET=REGION
0.CONFORM (LINES)
ENCLOSE THE AREA
LINES DETECTED: 30
CORRECT THE REGION
IF THIS NUMBER IS NOT
CORRECT.
OK
BACK
CTED.
OMRON
F350
ESC:BACK

FIG.52

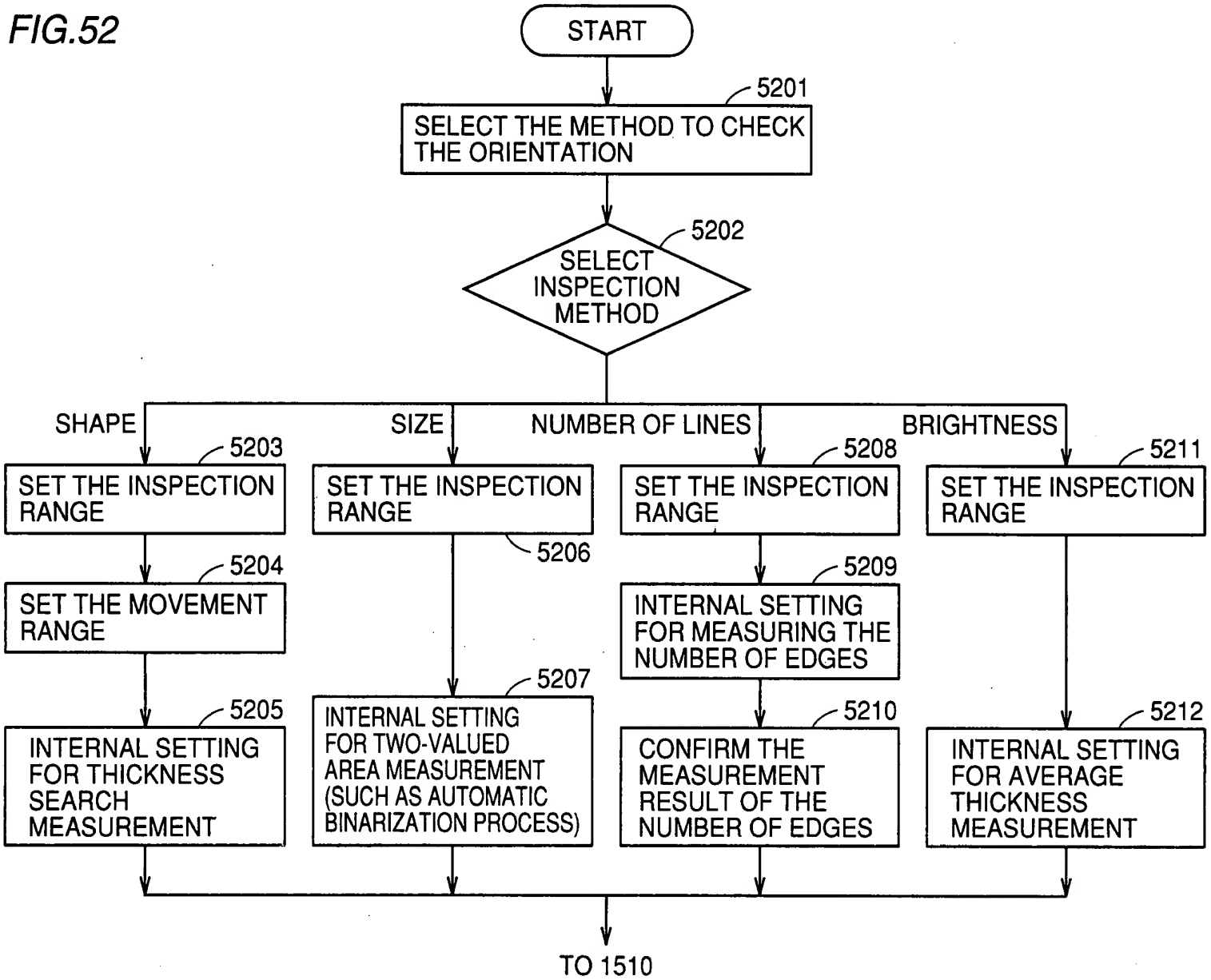

START
5201
SELECT THE METHOD TO CHECK THE ORIENTATION
5202
SELECT INSPECTION METHOD
SHAPE
SIZE
NUMBER OF LINES
BRIGHTNESS
5203
SET THE INSPECTION RANGE
5204
SET THE MOVEMENT RANGE
5205
INTERNAL SETTING FOR THICKNESS SEARCH MEASUREMENT
SET THE INSPECTION RANGE
5206
5207
INTERNAL SETTING FOR TWO-VALUED AREA MEASUREMENT (SUCH AS AUTOMATIC BINARIZATION PROCESS)
5208
SET THE INSPECTION RANGE
5209
INTERNAL SETTING FOR MEASURING THE NUMBER OF EDGES
5210
CONFIRM THE MEASUREMENT RESULT OF THE NUMBER OF EDGES
5211
SET THE INSPECTION RANGE
5212
INTERNAL SETTING FOR AVERAGE THICKNESS MEASUREMENT
TO 1510

FIG.53

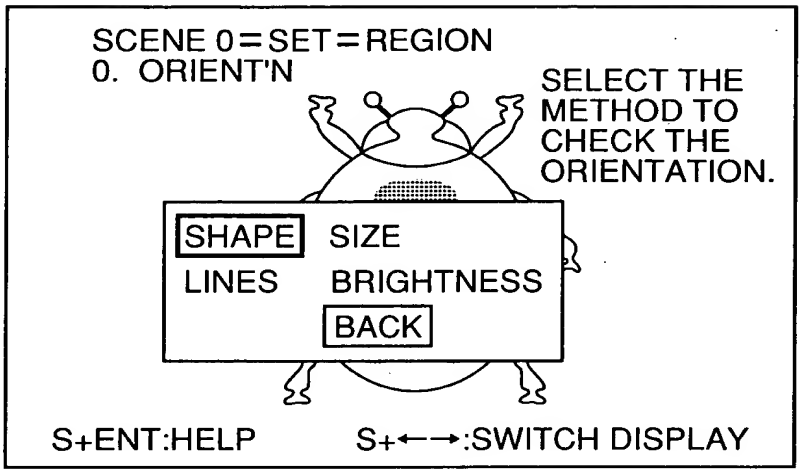

SCENE 0=SET=REGION
0. ORIENT'N
SELECT THE METHOD TO CHECK THE ORIENTATION.
SHAPE
SIZE
LINES
BRIGHTNESS
BACK
S+ENT:HELP
S+←→:SWITCH DISPLAY

FIG.54

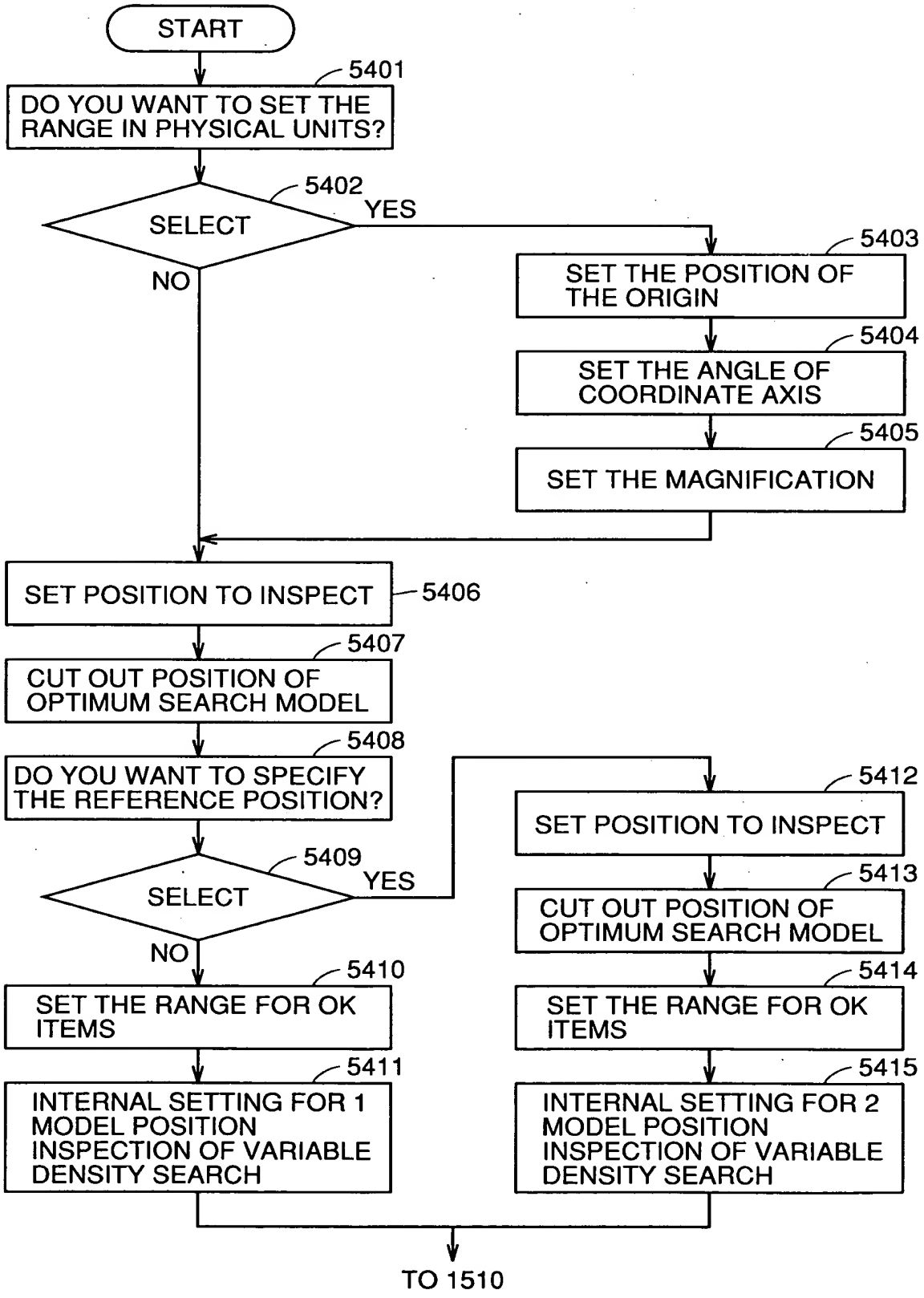

START
5401
DO YOU WANT TO SET THE RANGE IN PHYSICAL UNITS?
5402
SELECT
YES
NO
5403
SET THE POSITION OF THE ORIGIN
5404
SET THE ANGLE OF COORDINATE AXIS
5405
SET THE MAGNIFICATION
SET POSITION TO INSPECT
5406
5407
CUT OUT POSITION OF OPTIMUM SEARCH MODEL
5408
DO YOU WANT TO SPECIFY THE REFERENCE POSITION?
5409
SELECT
YES
NO
5410
SET THE RANGE FOR OK ITEMS
5411
INTERNAL SETTING FOR 1 MODEL POSITION INSPECTION OF VARIABLE DENSITY SEARCH
5412
SET POSITION TO INSPECT
5413
CUT OUT POSITION OF OPTIMUM SEARCH MODEL
5414
SET THE RANGE FOR OK ITEMS
5415
INTERNAL SETTING FOR 2 MODEL POSITION INSPECTION OF VARIABLE DENSITY SEARCH
TO 1510

FIG.55

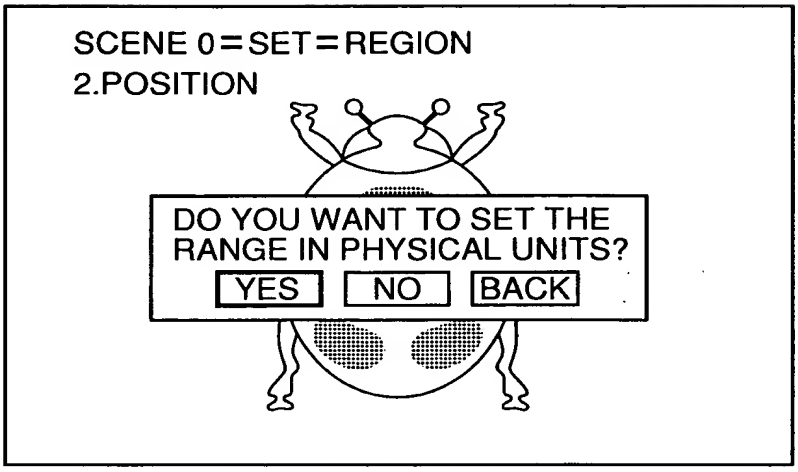


FIG.56

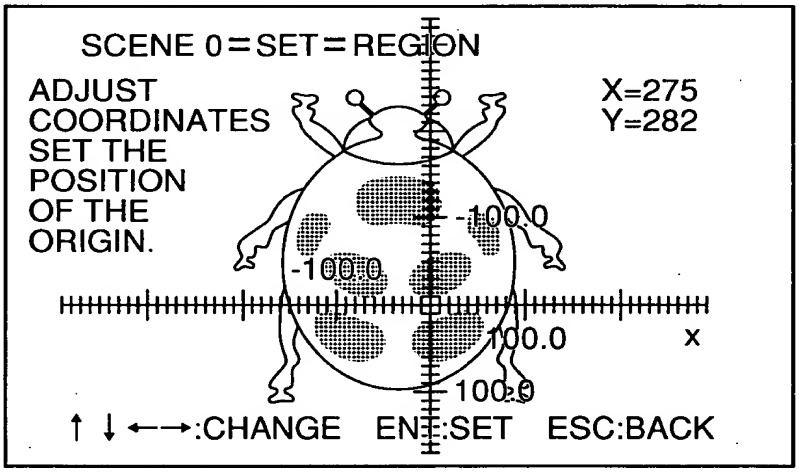


FIG.57

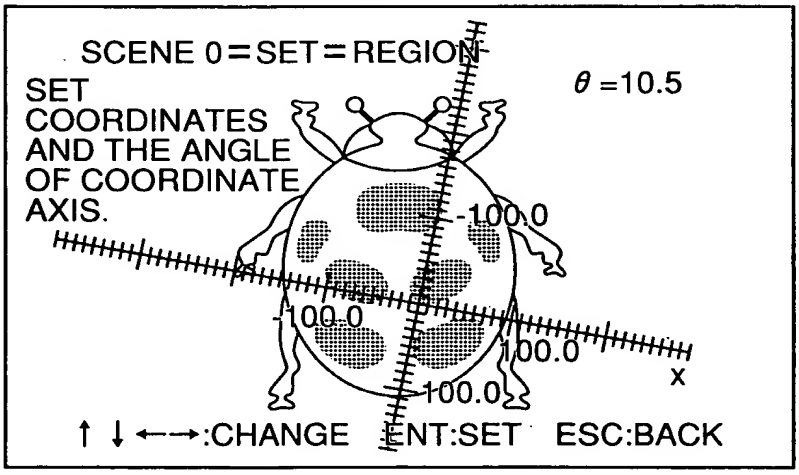


FIG.58

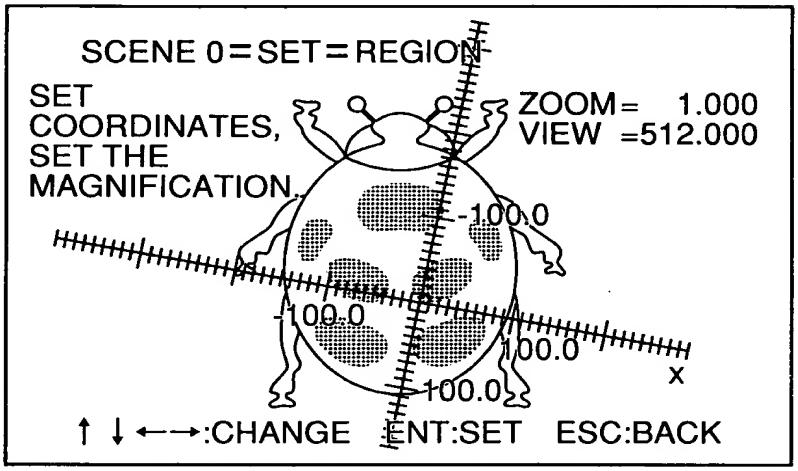


FIG.59

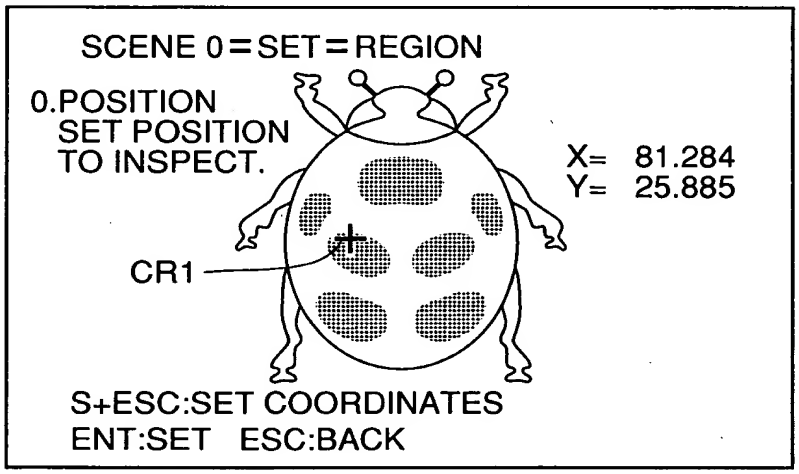


FIG.60

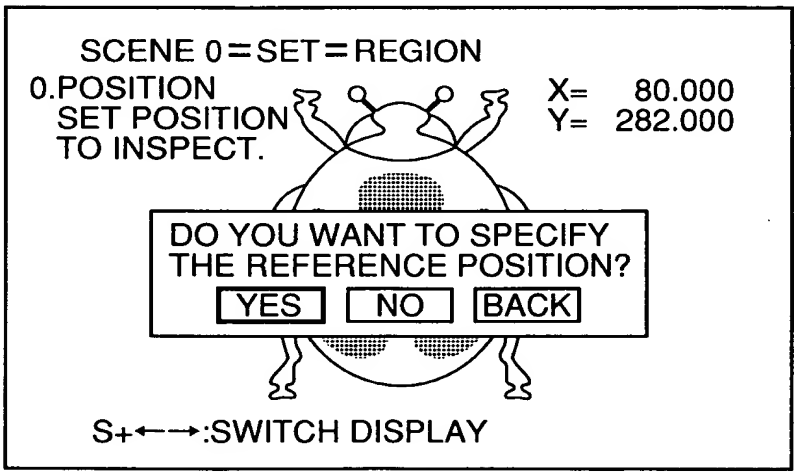


FIG.61

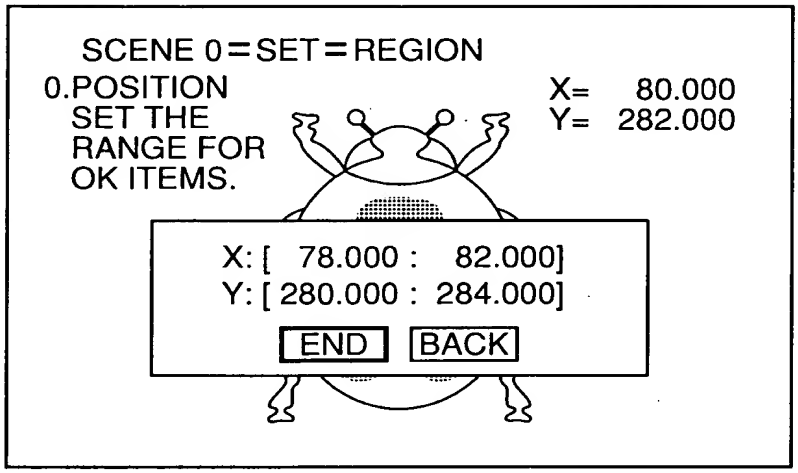


FIG.62

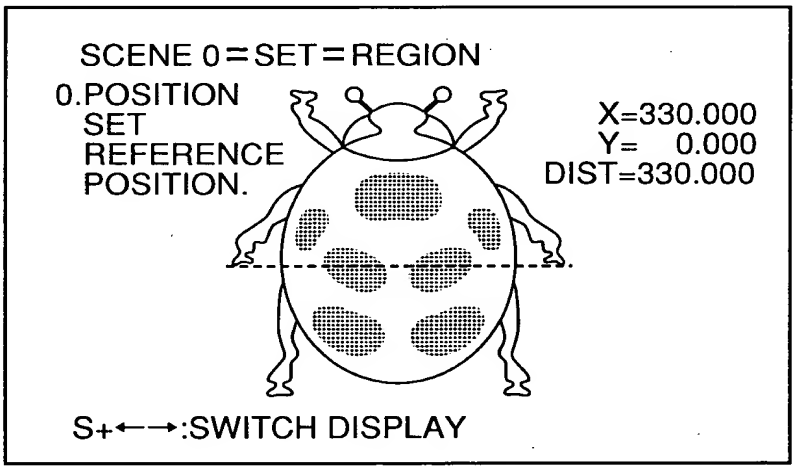


FIG.63

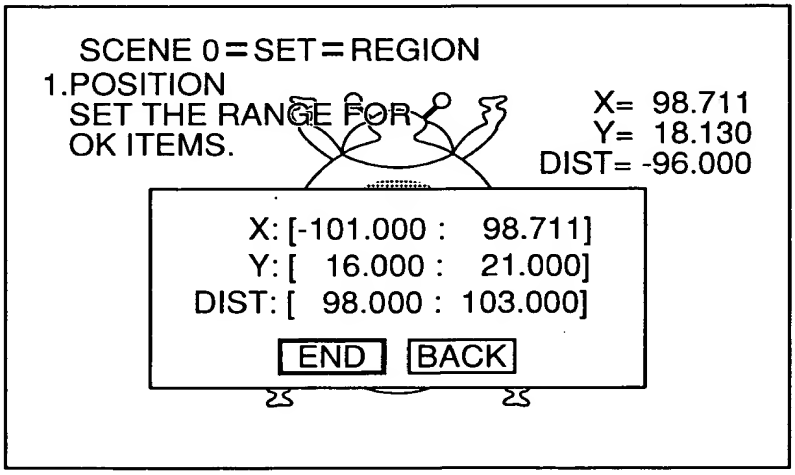


FIG.64

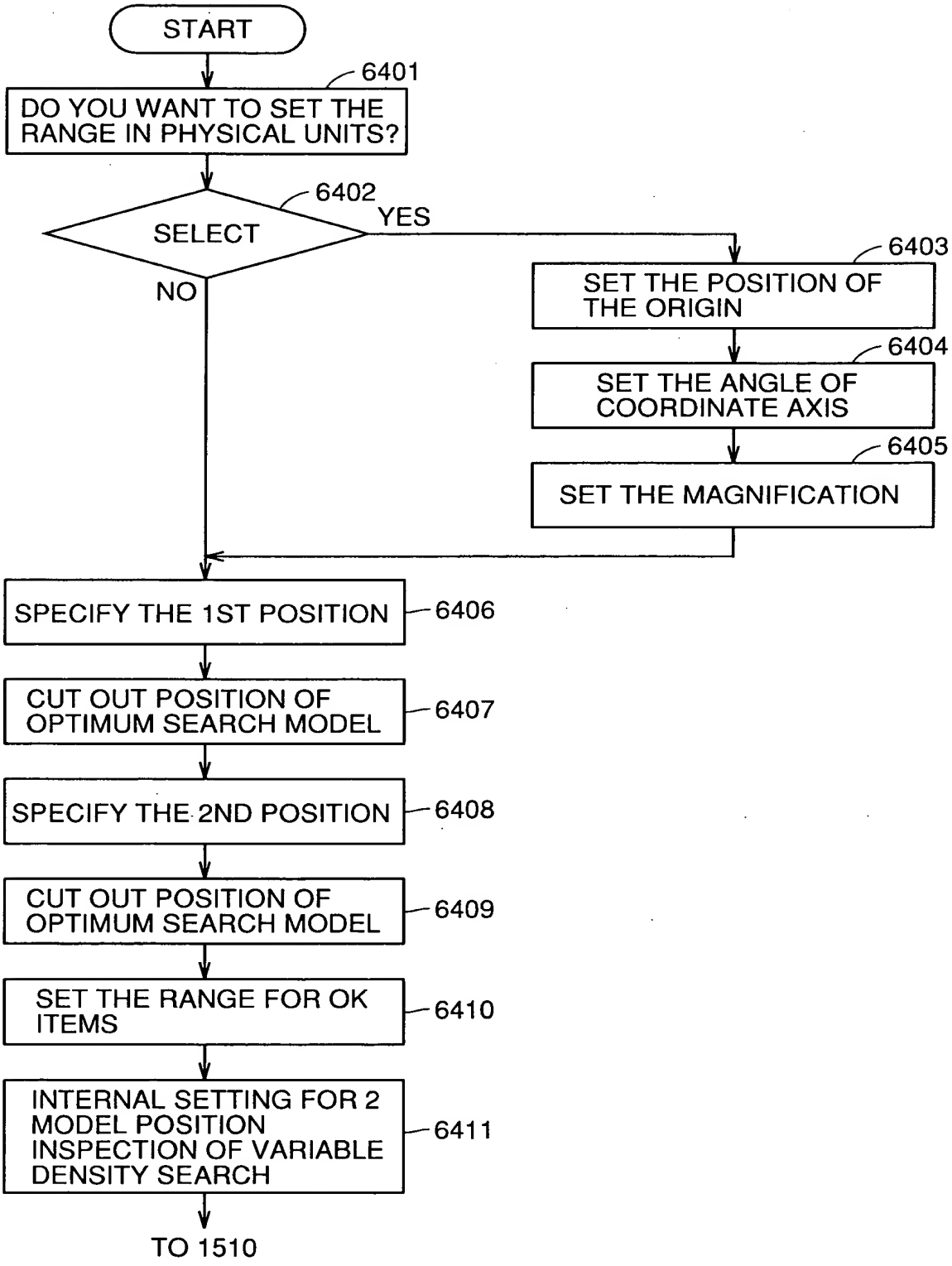

START
6401
DO YOU WANT TO SET THE RANGE IN PHYSICAL UNITS?
6402
SELECT
YES
NO
6403
SET THE POSITION OF THE ORIGIN
6404
SET THE ANGLE OF COORDINATE AXIS
6405
SET THE MAGNIFICATION
SPECIFY THE 1ST POSITION
6406
CUT OUT POSITION OF OPTIMUM SEARCH MODEL
6407
SPECIFY THE 2ND POSITION
6408
CUT OUT POSITION OF OPTIMUM SEARCH MODEL
6409
SET THE RANGE FOR OK ITEMS
6410
INTERNAL SETTING FOR 2 MODEL POSITION INSPECTION OF VARIABLE DENSITY SEARCH
6411
TO 1510

FIG.65

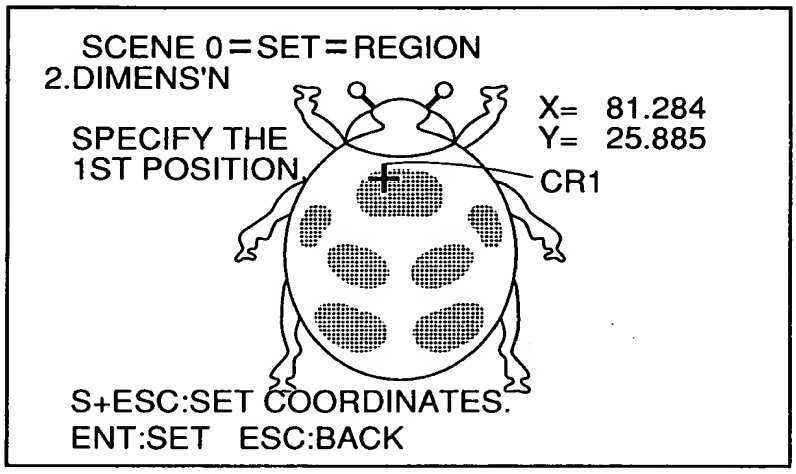


FIG.66

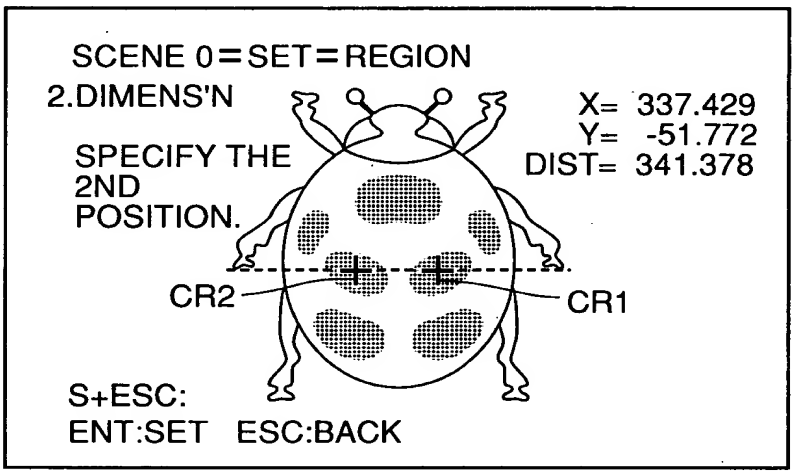


FIG.67

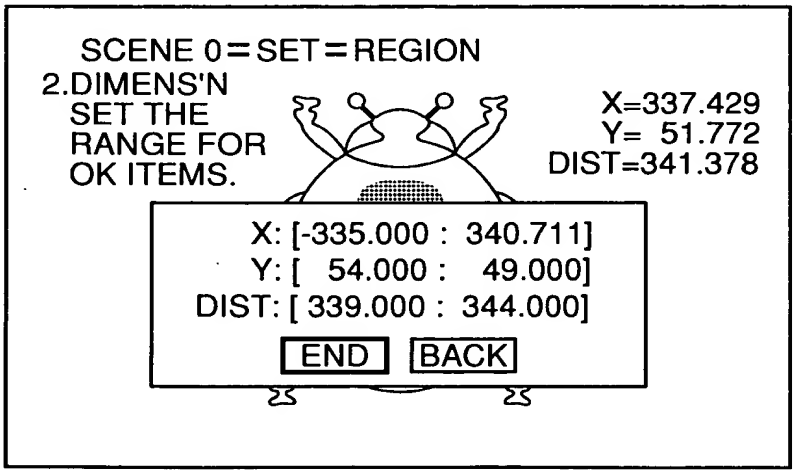


FIG.68

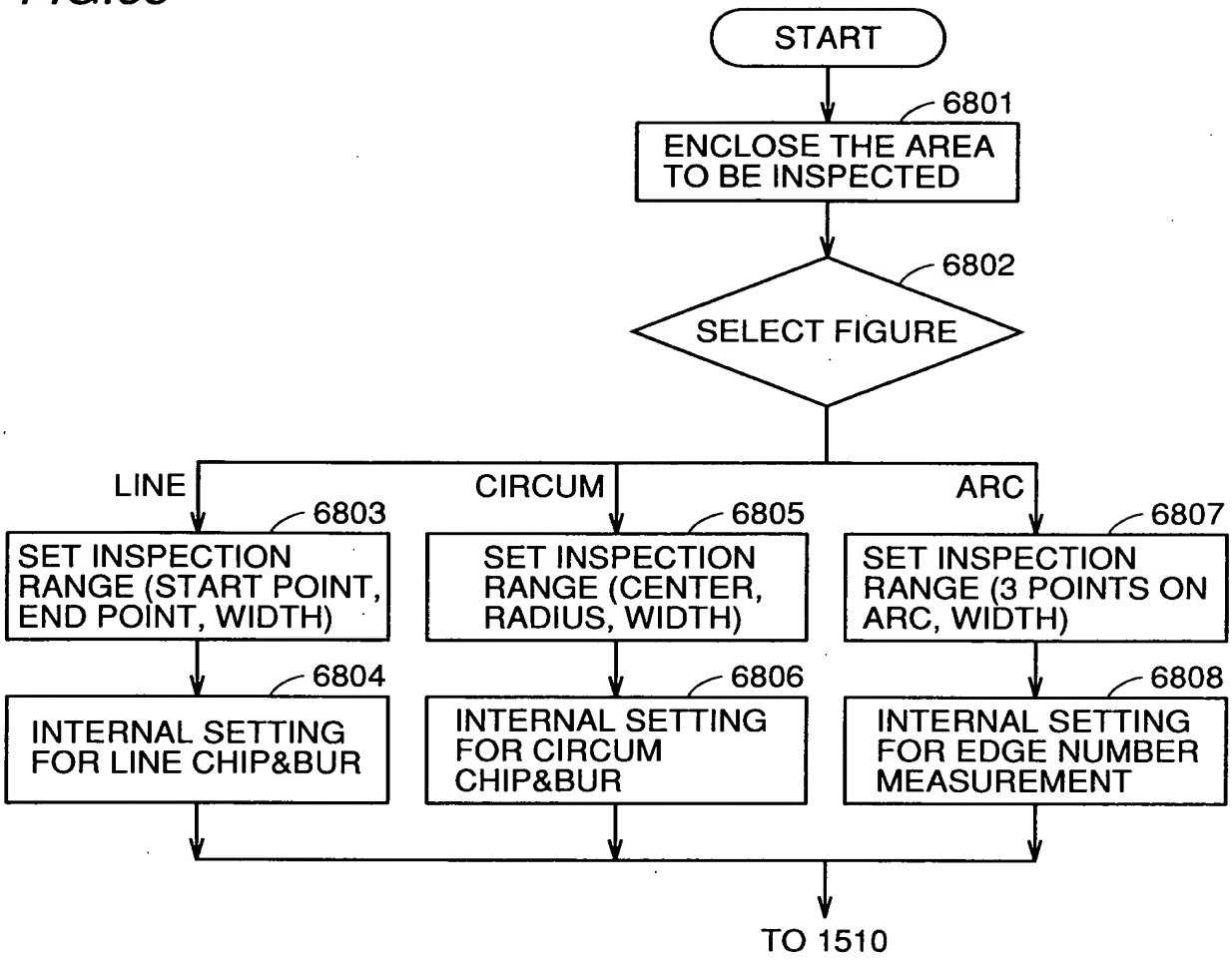

START
6801
ENCLOSE THE AREA TO BE INSPECTED
6802
SELECT FIGURE
LINE
CIRCUM
ARC
6803
SET INSPECTION RANGE (START POINT, END POINT, WIDTH)
6805
SET INSPECTION RANGE (CENTER, RADIUS, WIDTH)
6807
SET INSPECTION RANGE (3 POINTS ON ARC, WIDTH)
6804
INTERNAL SETTING FOR LINE CHIP&BUR
6806
INTERNAL SETTING FOR CIRCUM CHIP&BUR
6808
INTERNAL SETTING FOR EDGE NUMBER MEASUREMENT
TO 1510

FIG.69

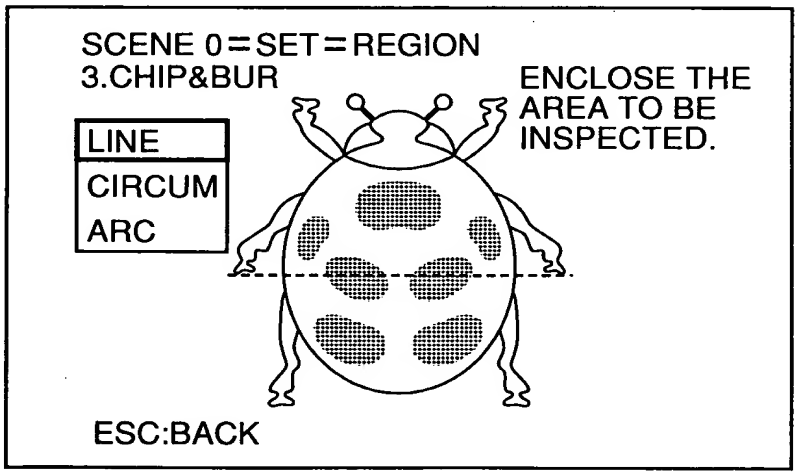

SCENE 0=SET=REGION
3.CHIP&BUR
ENCLOSE THE AREA TO BE INSPECTED.
LINE
CIRCUM
ARC
ESC:BACK

FIG.70

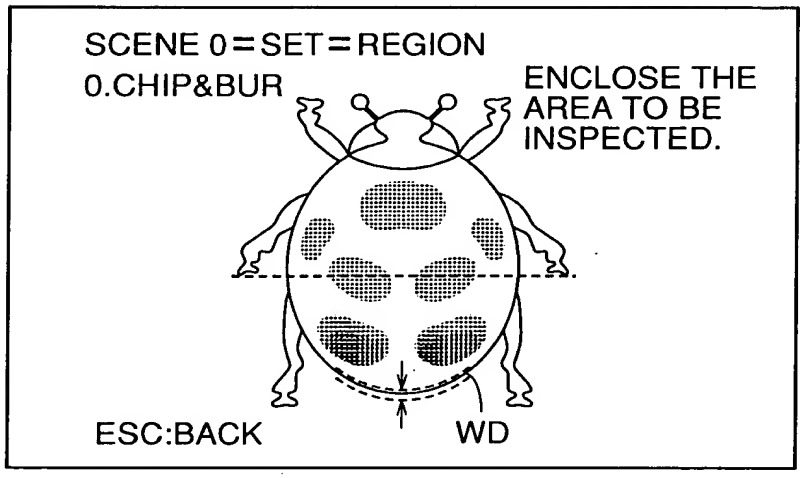

SCENE 0=SET=REGION
0.CHIP&BUR
ENCLOSE THE AREA TO BE INSPECTED.
ESC:BACK
WD

FIG.71

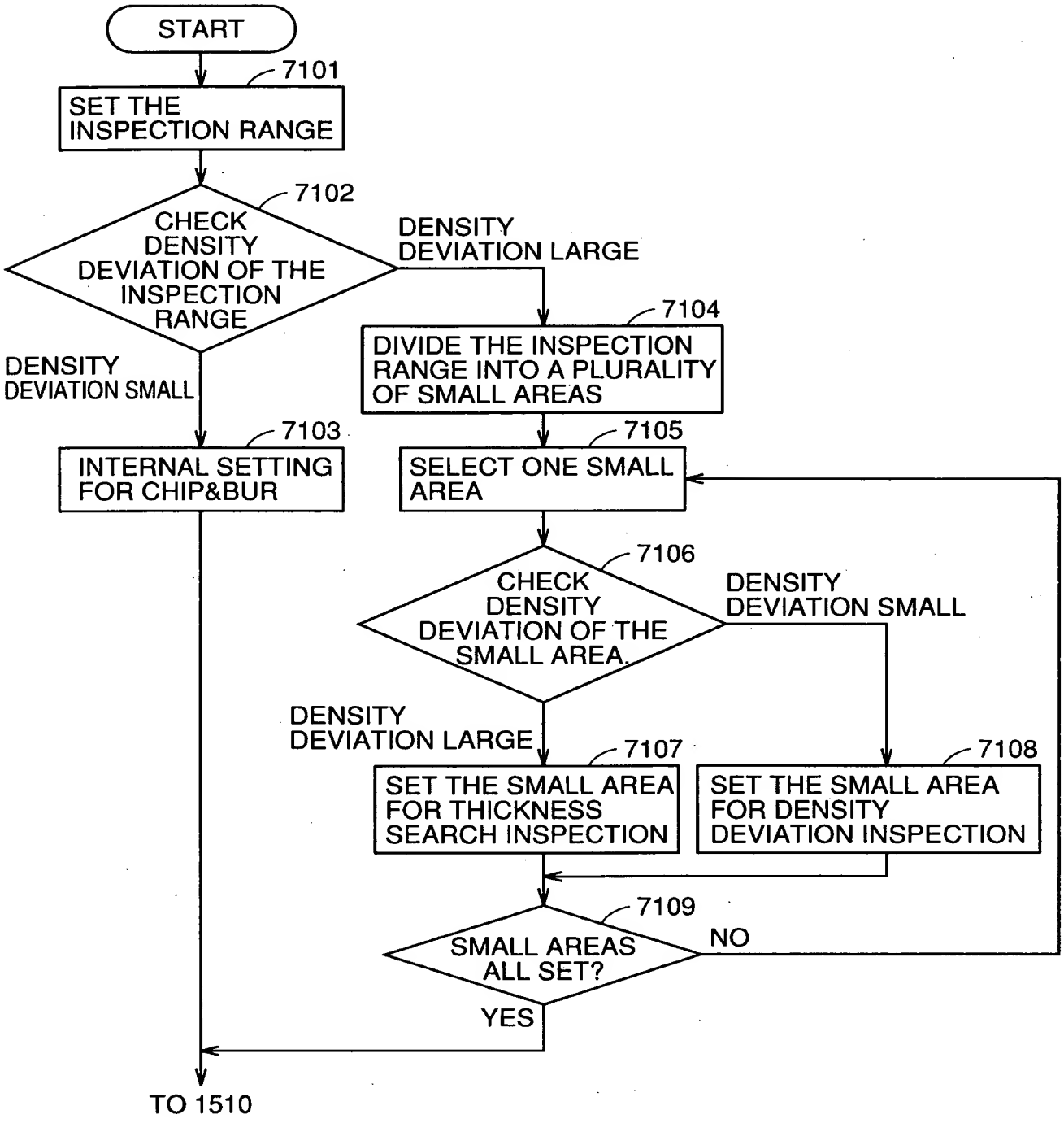

START
7101
SET THE INSPECTION RANGE
7102
CHECK DENSITY DEVIATION OF THE INSPECTION RANGE
DENSITY DEVIATION LARGE
DENSITY DEVIATION SMALL
7104
DIVIDE THE INSPECTION RANGE INTO A PLURALITY OF SMALL AREAS
7103
INTERNAL SETTING FOR CHIP&BUR
7105
SELECT ONE SMALL AREA
7106
CHECK DENSITY DEVIATION OF THE SMALL AREA.
DENSITY DEVIATION SMALL
DENSITY DEVIATION LARGE
7107
SET THE SMALL AREA FOR THICKNESS SEARCH INSPECTION
7108
SET THE SMALL AREA FOR DENSITY DEVIATION INSPECTION
7109
SMALL AREAS ALL SET?
NO
YES
TO 1510

FIG.72

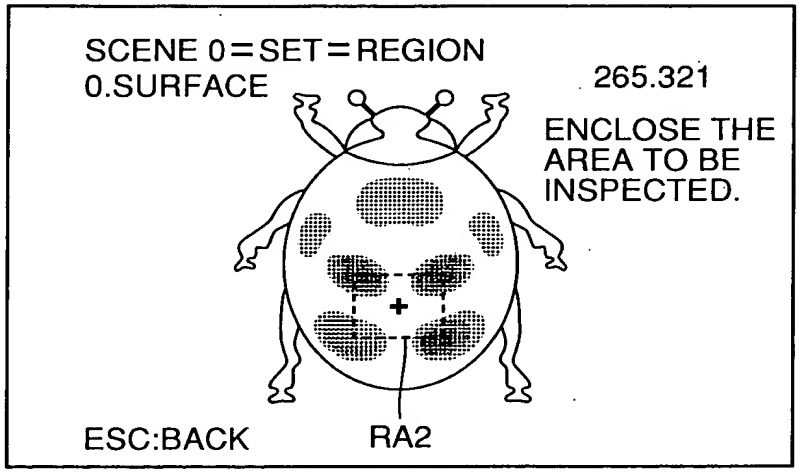

SCENE 0=SET=REGION
0.SURFACE
265.321
ENCLOSE THE AREA TO BE INSPECTED.
ESC:BACK
RA2

FIG.73

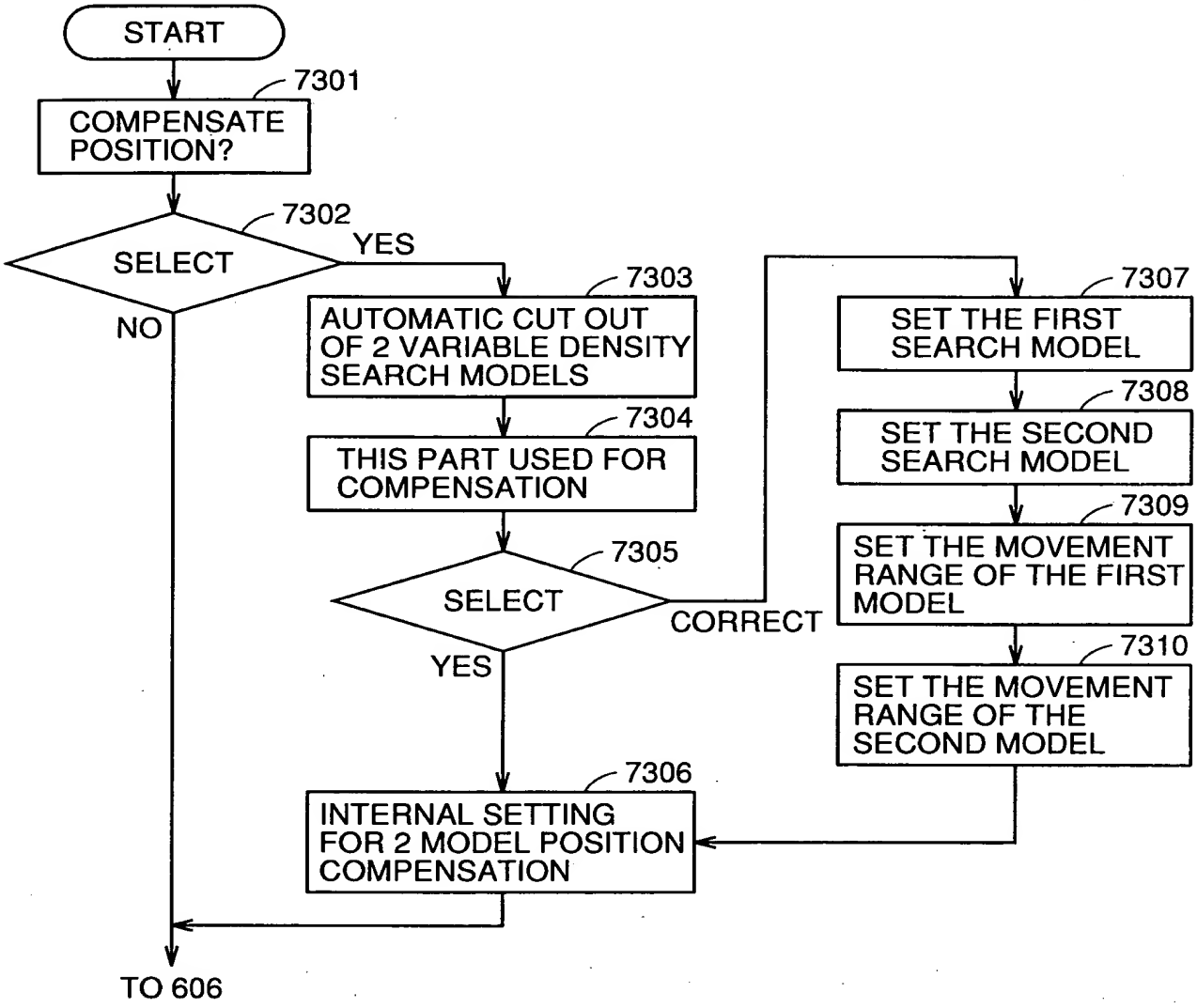

START
7301
COMPENSATE POSITION?
7302
SELECT
YES
NO
7303
AUTOMATIC CUT OUT OF 2 VARIABLE DENSITY SEARCH MODELS
7304
THIS PART USED FOR COMPENSATION
7305
SELECT
CORRECT
YES
7307
SET THE FIRST SEARCH MODEL
7308
SET THE SECOND SEARCH MODEL
7309
SET THE MOVEMENT RANGE OF THE FIRST MODEL
7310
SET THE MOVEMENT RANGE OF THE SECOND MODEL
7306
INTERNAL SETTING FOR 2 MODEL POSITION COMPENSATION
TO 606

FIG.74

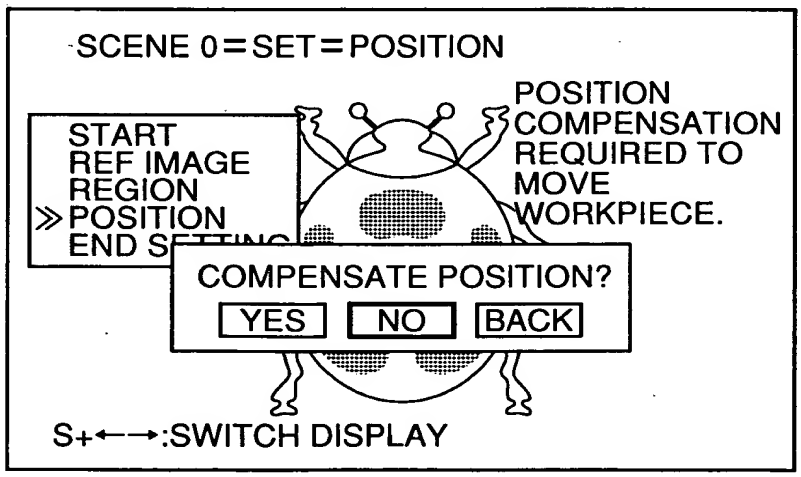

SCENE 0=SET=POSITION
START REF IMAGE REGION
≫POSITION
POSITION COMPENSATION REQUIRED TO MOVE WORKPIECE.
COMPENSATE POSITION?
YES
NO
BACK
S+←→:SWITCH DISPLAY

FIG.75

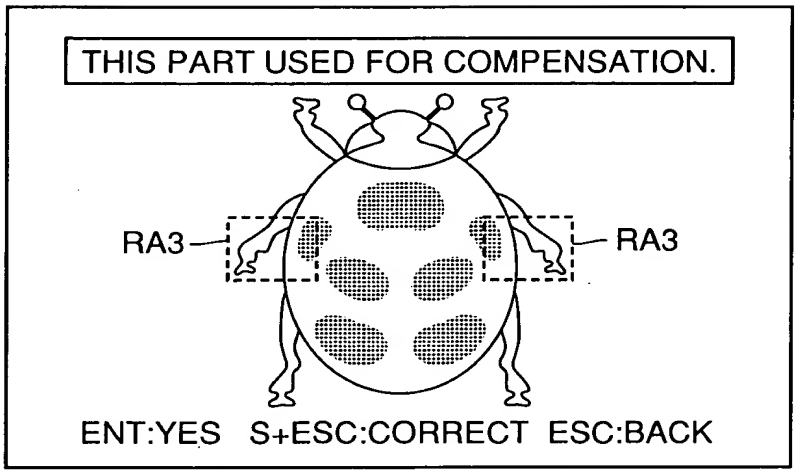


FIG.76

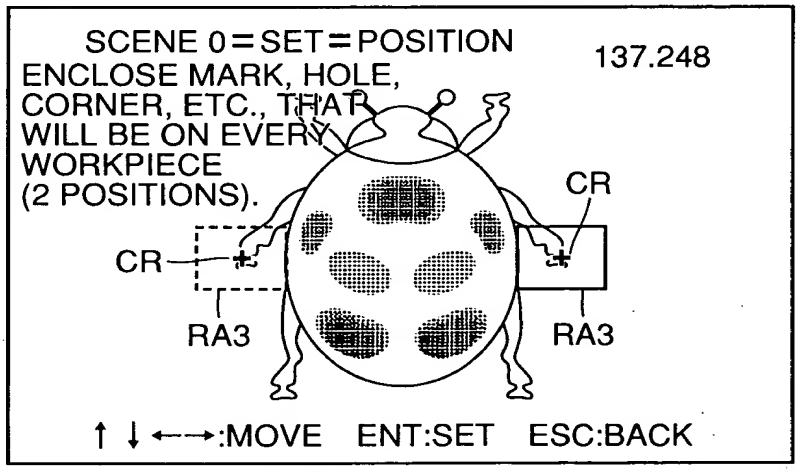


FIG.77

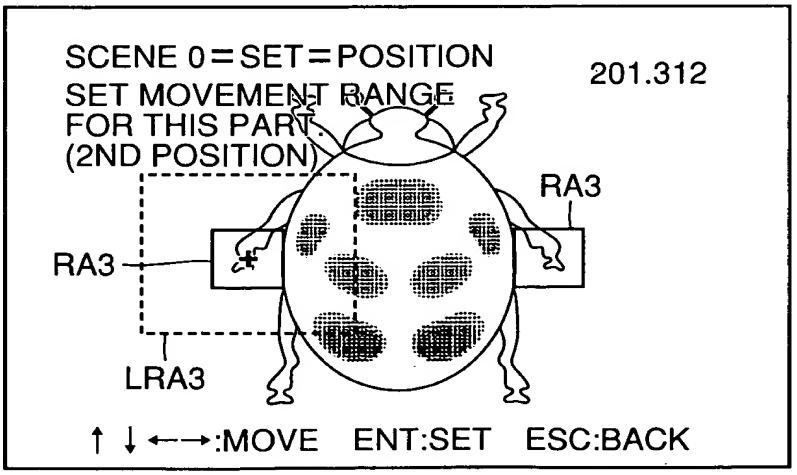


FIG.78

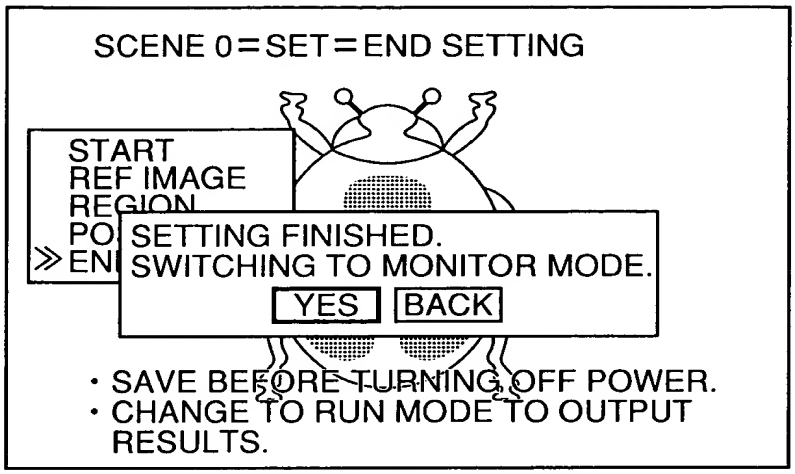
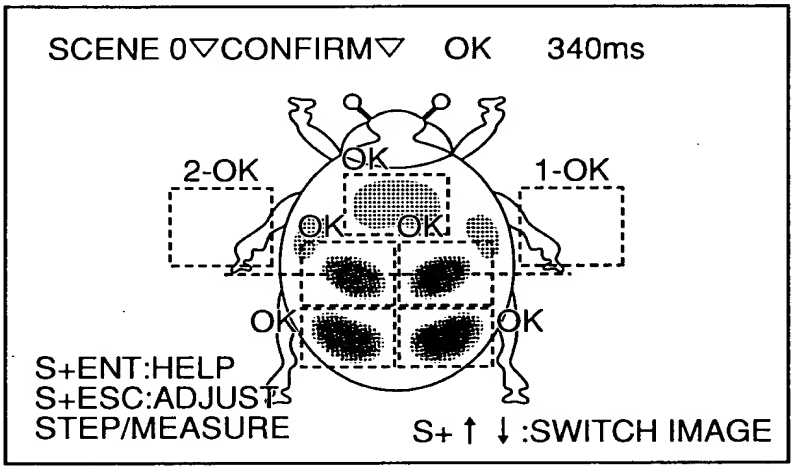

SCENE 0=SET=END SETTING
START
REF IMAGE
REGION
PO
≫ EN
SETTING FINISHED.
SWITCHING TO MONITOR MODE.
YES
BACK
• SAVE BEFORE TURNING OFF POWER.
• CHANGE TO RUN MODE TO OUTPUT RESULTS.

FIG.79


SCENE 0▽CONFIRM▽ OK 340ms
2-OK
OK
1-OK
OK
OK
OK
OK
S+ENT:HELP
S+ESC:ADJUST
STEP/MEASURE
S+↑ ↓:SWITCH IMAGE